# PRE-PROJECT AND PROJECT CONSTRUCTION PLANNING IN FINLAND. GUIDE FOR FOREIGNERS

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ABSTRACT

The primary purpose of this Bachelor's thesis was to identify and describe a planning process of buying property construction of a house in Finland for foreigners.

The analysis of the thesis consists of two stages. One part is overall theory about how projects are planned. The second part of the thesis deals with this topic using the example of a real construction project that was performed.

Information for the thesis was collected from internet sources and various publications related to the topic. In addition, owners of existing houses and employees in real estate companies were interviewed.

The result of the thesis was the creation of a step by step workflow guide which will is attached as an appendix.

**Keywords** Construction, planning, project, guide

**Pages** 64 pages including appendices 4 pages

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# 1 INTRODUCTION

Nowadays, there are several advantages of construction a building in Finland. Finns buy and build a great deal in their country. Bigger and bigger percentage of foreigners are coming and building their own houses as Finland is a great place for your own cottage/semi-storey house.

However, construction of your own house will be much more complicated than buying a finished house. You will face with uncountable number of problems appearing at different stages.

The goal of this Bachelor's Thesis is to make planning concepts of construction of your own family house in Finland as transparent as possible, so that a foreigner could freely move between the phases of a project while building their own house here. The emphasis is put on the description of processes and parts of construction to let the future owner of a house understand the main factors and problems which would influence the construction of a house. This thesis will give a representation of what is advisable to take into consideration when you want to build your own house and what kind of house you want in Finland. The information for the thesis was collected using such sources as books, internet, and newspapers. Owners of existing houses and employees in real estate companies in Finland were also interviewed.

# 2 CONSTRUCTION PERMISSION FOR FOREIGNERS

## 2.1 Foreigners rights for purchasing

Foreign citizens are allowed to buy plots in Finland. In exceptional cases, when this requires the observance of national interests, the right of citizens of other states to acquire enterprises may arise. (Building a house by Finnish technology, 2019).

## 2.2 Foreigners' rights for construction

For Finnish citizens and foreigners, the same construction rules apply. Nevertheless, municipalities can establish a requirement for permanent residence, for example, when purchasing land plots intended for housing cottage construction, to which engineering and utility systems are connected (for example, streets, electricity, water supply, sewage). A competent partner company, in which the client applies for the purchase of land, will take into account all the specific details of obtaining permits

to build a house using Finnish technology. Although the subject of most real estate transactions made by foreign citizens are already finished objects, new construction and renovation are very active. This sets additional work for municipal employees, in particular, because of the language barrier and because of the need to clarify building codes and regulations.

Expat Finland (2004-2019) released information on that the administration of Government in 2000 applied the necessity that a non-inhabitant must get a grant to purchase an optional private property in Finland, putting outsiders on the very same balance as Finns. Also, foreigners are limited from purchasing property in the Åland (Ahvenanmaa) archipelago, a self-governing, Swedish-talking district of Finland. Finns are supposed to be requested to obtain permission to buy property on the Åland Islands (Ahvenanmaa), which enjoys the status of an autonomous province. Åland has a self-governance also in the spatial planning issues and has its own Building Code and the Act on Physical and Economic Planning. Non-occupants aiming to buy property in Finland should contact a home operator who can help them through the purchasing procedure in English or numerous different dialects. (BSR INTERREG III B project 2005, 7)

For foreigners building a house in Finland, it makes sense to hire a proven translator who will not only translate in the negotiations, but will also take on a certain part of the organizational issues, as well as the responsibility to comply with the law. It is possible that the presence of an experienced translator will help to avoid many unnecessary expense items, such as, for example, conducting an audit of a construction company at the expense of the customer. (Owner, personal communication, 03.08.2019-04.08.2019)

# 3 CHOICE OF A CONSTRUCTION PROJECT

Municipal construction regulations provide additional rules and regulations due to local conditions. Each municipality has its own building regulations, which may differ markedly from the building regulations of other municipalities. The municipal government supervising the construction industry can also set construction rules (for example, materials for construction and color of the building) that operate on the territory of the municipality. Finally, the official responsible for the supervision of the construction sector by the municipality (usually the construction inspector) can give instructions and recommendations on specific aspects of the construction. In addition, the Finnish Building Code governs and directs building design, construction and supervision. (Nykänen 2009, p.37)

## 3.1 **Choice of a site**

According to experts, the choice of a site should be approached very carefully. After all, your house should be heated, and there should be a sewage system. Therefore, if you are offered a beautiful plot, and even at a reasonable price, ask how far it is from the engineering infrastructure. Laying communication networks is not only a very expensive undertaking, but also requires exhausting approvals. You should also find out how the situation with drinking water is. The depth of its location in different areas may vary significantly and, therefore, the cost of drilling a well will vary in the same range. You will have to pay for the creation of an exit from the intra-village road directly to your site. This is not a complete list of costs, which must be considered when choosing a site. The first and main task that needs to be solved before starting construction is the choice of a land plot for construction. The second important point is the choice of the project of the house and these two points are closely related. The project is always tied to specific conditions on the ground - the relief, the nature of the soil, the level of groundwater and the like. Therefore, it is better to start with the selection of a plot than to first select a project, and then look for a land plot on which this project can be implemented. (Choosing a site for building a house 2019.)

The main rule when choosing a site is not to rush. Consider different options, evaluate them for each item above, compare not only the prices of the plots themselves, but also the approximate costs of compensating for various difficulties (such as a lack of water or electricity). It is convenient to write out all the options in the form of a table with the characteristics of the plots, so it will be much easier to compare them. Make a purchasing decision only after weighing all the pros and cons, and do not forget about a thorough check of documents on the site. A week spent at this stage can save months and even years in the future, not to mention possible financial losses (Choosing a House Site: How to Pick the Best Possible Spot to Build 2019.)

### 3.1.1 Flat site

The plot, located on a flat open area, is attractive in that it is easier to build a house and build a garden in it than, for example, on a hillside. In addition, water during irrigation and precipitation is absorbed more evenly on the plain and does not drain in the direction of the slope. In this case, it will be necessary to build a shelter for plants from the wind to protect them from direct sunlight, and plant trees to improve the microclimate (Mernikov & Zhabzev 2018, p.6.)

### 3.1.2 Lowland site

The lowland plot has natural wind protection. In addition, in the absence of water supply, this problem can be solved with the help of a well, as the underground waters in such a terrain are shallow. This also consists of the main negative groundwater close to the surface. They can flood the basement of the house. This will require additional costs for strengthening the waterproofing of the foundation and drainage of the site. In addition, the lands located in the lowland are, as a rule, heavily shaded and this is accompanied by an increased humidity of air. (Mernikov & Zhabzev 2018, p.6-7.)

### 3.1.3 Hill site

No less attractive is a plot located on a hillside. From a hill a wonderful view of the surroundings opens. Landings will not suffer from a lack of sunlight, and there will be an opportunity to create a solid "alpine hill". However, to prevent soil erosion, it will be necessary to create terraces reinforced with masonry or brickwork (and this is a troublesome and expensive business). There may be problems with the water supply: there may not be enough pressure in the water supply to raise the water uphill, and for the sump, deep well will have to be dug, since underground water at elevations lie deeply. Before acquiring such a site, it is necessary to conduct serious geological surveys that will help to avert the danger of a landslide and choose a place for construction. Quicksand can be detected in the result of research. It is impossible to build in such a building, since it is highly probable that in the future it will cause cracks in the foundations, bearing walls and, ultimately, can lead to the collapse of the structure. (4 Keys for Choosing Where to Site Your House 2019.)

### 3.1.4 River site

If the plot is located near the river or delight in the magical view of the water surface. It will be nice to swim in the pond, sunbathe on the beach, catch a fish. There is no need to build a pool, and there will be no problems watering the garden. The problems include the abundance of mosquitoes and other insects, as well as reptiles and amphibians. High humidity will require enhanced protection of buildings. In addition, in such an area there is a danger of flooding during the spring season. (Mernikov & Zhabcev 2018, p.10-11.)

### 3.1.5 Inside of a forest

It should be noted that the construction of heat-intensive, lightweight construction and very attractive wooden houses in the forest, however, is associated with increased fire hazard. The forest is prone to natural fires. Forest fire can be rampant. The probability of being in the midst of

a fire is very high. Other more important disadvantages include the delivery of materials, transport of builders. Construction control will be complicated for a simple reason: the construction area is very remote from external communications and therefore may cost more. It is unlikely that they can cope on their own, especially if there is no constant power supply. The probability of being in the midst of a fire is very high, even if the following things apply:
-lightning rods were built;
-comply with all necessary fire safety requirements for the construction of such buildings in the forest;
-all nearby trees were cut off;
-a territory is provided with a supply of water to extinguish,

Among the negative aspects in the construction of a house in the forest also include:
-lack of engineering communications, which significantly complicates the construction and operation of the house;
-the need for transportation over considerable distances from the warehouses of building materials;
-the need to apply modern, expensive, effective, but economical technologies;
-solving the problem of power supply;
-monitoring the impact of the forest on the structure, the protection of structures from spontaneous overgrowing of the house adjoining by wild greenery;
-the need to provide increased thermal insulation (Building a house in the forest - advantages and disadvantages 2019.)

### 3.1.6 Near forest site

The proximity of the forest will give you the opportunity to collect berries, mushrooms and flowers right next to the site. You can enjoy the birds singing, the beauty of trees, breathe in fresh, clean and fragrant air, standing right on the doorstep of your home. The forest will protect your territory from the effects of strong winds and will give you material for its arrangement and heating of the home. At the same time, you will suffer from an abundance of insect pests. Flocks of birds and small animals — hares, squirrels, mice, etc. — come to the disadvantages of life. It is possible that larger animals or even predators can come to you. Those planted will constantly suffer from the shadow falling from the trees. (Mernikov & Zhabcev 2018, p.10-11.)

## 3.2 **Factors affecting the choice of a plot**

In what area should the site be located? City line, suburb or “open field”? The price of the site, the availability of communications, the surrounding

view and the number of obstacles when coordinating a future project will greatly depend on this initial criterion.
What should be the size of the site? This greatly depends on your plans for the number of buildings on the site, as well as the presence of a garden, etc. The optimal proportion is usually the ratio of the area of the future house to the total area of the plot as 1 to 10. That is, it is easiest to take the area of the house and multiply it by ten. (Choosing a site for building a house 2019.) Do not forget that each region municipality defines the size of the residential area permissible on this site, as well as the number of stores allowed on it.

### 3.3 **Buying a site**

You can buy a plot of land for construction on the primary or secondary real estate market. To search for options, you can contact the administration of the municipality where you want to build, or to ads of private individuals. The main thing in this matter is to stock up with the necessary minimum of legal knowledge in order to understand the issue and not to buy a "pig in a poke" with a bunch of potential problems. If your knowledge is not enough and you are afraid of fraud, it is better to take the advice of a professional lawyer on these types of transactions. It usually takes quite a lot of time at this stage, because you need not only to select a site, but also check its “cleanliness” according to documents and arrange everything correctly (Acquisition of land for construction 2019.)

It is advisable to pay attention to the documents for the site geological characteristics and the place of the site :
The site should not be located on the territory of sanitary protection or water protection zones, as well as agricultural land, so that later there would be no problems with its development. In addition, it is better to buy a site that has already passed the land surveying procedure.
What is the nature of the soil on the site, what is the level of groundwater and the depth of the aquifer (if you plan to produce water using your own well) and the quality of the water. Which communications are already available and which are planned in the near future (during the year). Remember that for construction you will need normal access roads, water, electricity and sewage (septic tank).
The price of the site should not be significantly lower than average. This is highly likely to indicate that the site is “problematic”. There may be obstacles with registration of ownership rights to it, some restrictions on development / communications, problematic soil, etc (Acquisition of land for construction 2019.)

### 3.3.1 Type of soil and ground water

The type of soil is the most important characteristic of the site, which greatly affects the choice of the foundation of the future home. In addition to the type of soil itself, the depth of groundwater also has a decisive influence. These data can be obtained using geological examination, which is also carried out by special bodies. From a practical point of view, a house can be built on almost any soil, even in still water. Everything will rest on the complexity and cost of architectural solutions for each specific case. Therefore, in the first place, it will be necessary to conduct a geological examination, and then already contact the architect to choose a way to implement a specific house project. (Foundation Systems and Soil Types 2019.)

High groundwater levels can play a trick on the site owner. During the flood period, some areas can even be completely flooded with water, which will make it almost impossible or difficult to realize the desire to build a basement or underground garage under the house. (Foundation Systems and Soil Types 2019.)

There is a simple method of self-checking the groundwater level on the site. It is necessary to dig several pits or wells at different points of the site using a shovel or a manual drill, 70-80 cm deep, and wait an hour or two. If after this time the bottom of the pits remains dry, there is nothing to worry about. However, it is also advisable to learn from neighbors about whether areas are flooded in spring during floods or during heavy prolonged rains. Particular attention should be paid to this in case of buying a plot near the river. (Type of soil and groundwater 2019.)

### 3.3.2 Sewerage

The ideal option is to connect to a collective water supply system, although this option has its drawbacks (difficulties in coordinating the connection, often low water pressure in the summer due to the massive watering of gardens and vegetable gardens). If there is no water supply, then it remains to drill its own well, and here serious obstacles often arise.

Therefore, it is advisable to also ask about the issue of water supply at the very beginning of the assessment of the site you like, otherwise the costs of individual access to water through the well and its further treatment can greatly affect the budget. Close to water supply is the issue of arranging sewage on the site. The ability to connect to a centralized sewage system usually exists only within the city, and even then, it is not everywhere, so in most cases, in practice, only the option of arranging an individual septic tank remains. This can be either a standard waterproofing pit (with the need for regular pumping and removal of liquid waste), or modern multicomponent systems for filtering and

treating waste, up to the possibility of using the final water for irrigation of the garden (5 Ways To Get Water To Your Tiny House 2019.)

### 3.3.3 Electricity supply

You need to find out the location of the nearest electrical substation and the maximum power that can be allocated to your future home. Due to the fact that most substations and power lines are already quite worn out, Power grids usually severely limit the amount of power allocated to the house (about 10 kilowatts). Given the growing number of electrical appliances in homes, you will either have to save on energy consumption, or try to obtain permission for additional power in various ways, or obtain it using alternative methods (solar panels, wind generators, etc.). All this, of course, applies to the case when electricity passes near your site and you have the opportunity to connect to it. If you bought a plot in a non-plowed field, everything becomes complicated, because you will either have to wait for the district administration's initiative to provide you with electricity (in case the land is cut into many plots), or pay for the installation of electricity to you. Until then, you will have to use a portable diesel or gasoline generator (Electricity 2019.)

### 3.3.4 Gas supply

Gas is usually present only in the city or in the suburbs, but if the site is located far from civilization, the possibility of having gas supply there is low. But if you have a gas pipeline, it will be much easier for you to solve the problem in the future with the installation of heating and hot water systems in the house, as well as with cooking. All this, in addition, will reduce power consumption, which will help reduce costs for this item. Therefore, it is worth considering the possibility of buying a site near the gas pipeline, of course, after counting all the pros and cons. (Suomenkaasuenergia 2019.)

## 3.4 **Choice of construction materials**

### 3.4.1 Wooden houses

Tree is a classic version that has stood the test of time. Many houses built by skilled craftsmen of their time have stood for centuries, practically without losing their operational properties. Today you can choose from different technologies for building wooden houses. It can be a log house made of logs or timber, or a frame house.

Despite the difference in technologies for building wooden houses, all of them have their common pros and cons.

Positive properties of wooden houses include:

-low weight compared to stone houses, which allows you to make a simpler foundation and save on construction;
-lower thermal conductivity of wood compared to stone - better thermal insulation with thinner walls;
-high environmental friendliness and aesthetic appearance;
initially good ventilation in the house.
However, there are many disadvantages:
-the tree shrivels over time and, despite the sealing of cracks, passes drafts, which causes an increase in heating costs in winter;
A wooden house undergoes shrinkage on average for three years, which does not allow to make a high-quality finish before this time. In addition, a wooden house can “grow” in height, which ultimately puts an end to some finishes (such as laying tiles, etc.). (Mernikov & Zhabzev, 90-98, 2018.)

### 3.4.2 Sandwich panels (SIP panels, Canadian technology)

Canadian technology houses are built very quickly and easily; this is reminiscent of the assembly of Lego. The basis is OSB multi-layer panels (pressed flat chips impregnated with moisture-resistant resin) with insulation inside. Depending on the type of the project, a house built from SIP panels can be called frame, panel or frame-panel. The whole difference is whether the house will have a separate supporting frame or whether the SIP panels themselves will perform the supporting function (Canadian Technology. SIP Panel Houses 2019.)

Panel construction using Canadian technology has many advantages:
-low weight of the house, therefore, a sufficient simple foundation;
-the high structural strength and rigidity are provided by the panels themselves, which allows the house to successfully withstand even hurricane winds and earthquakes;
-Significant (up to 30%) savings in the useful area of the house due to the reduction in wall thickness;
-good thermal and sound insulation (from sound type noise);
-high speed of construction, no special equipment is needed, you can build in any weather;
-the house does not shrink, finishing can be started immediately;
-the flat surface of the plates greatly facilitates the finish (Insulated Panels For Walls Pros and Cons 2019.)

Despite the advantages, this technology has its drawbacks:
third degree of fire resistance, similar to wood. Although in practice, it is very difficult to set fire to SIP panels, and the polystyrene foam used internally as a heater is self-extinguishing, you need to remember about combustibility. Fire resistance can be enhanced by sheathing the panels from the inside with non-combustible sheet material without air gap, and externally by coating with a flame retardant or plastering. For example,

after facing SIP panels with drywall without an air gap, they go into the second, or even into the first class of fire resistance;
-Quite high conductivity of shock type noise;
-Know-how. Not many workers are aware of how to work with SIP panels.
-Non-environmental - the glue of OSB-plates, like chipboard, emits formaldehyde, good ventilation is needed;
-Hard to give changes to the initial project;
-Not the smallest price.
(Insulated Panels For Walls Pros and Cons 2019.)

Summarizing the pros and cons of this technology, we can say that the main disadvantages (except for the price) are easily eliminated and the pros as a result significantly outweigh. And if you want to build on your own and do not want to think about how to find a good general contractor for building a house, then this technology will be the best choice. Moreover, the possible overpayment for a sandwich panel at the construction stage will quickly pay off during the operation of the house due to savings on heating. (Choice of construction materials for a house 2019.)

### 3.4.3 Brick houses

Brick and stone have long been used in construction, even despite their main drawback i.e. high heat conductivity. Brick houses are very massive, but this is also their plus, because thanks to the high strength of the stone, it is possible to build high-rise buildings from it. Currently, pure stone is rarely used in construction. It was almost completely replaced by concrete in various forms and brick, which is also produced in different variations. The industry produces many types of bricks, which, with a competent combination, allow you to build a beautiful and durable house. Previously, we could only build from heavy silicate and solid red bricks. Now various types of lightweight bricks are being produced, both for exterior cladding and for main construction.
Pros:
-beautiful "respectable" appearance;
-high strength and fire resistance of the house;
-good insulation.
Cons:
-big weight at home, a strong and deep foundation is required;
-high thermal conductivity - requires additional insulation or a large thickness of the external walls;
-interior decoration is required, few people want to live in a house with bare brick walls;
-high cost of construction. (Mernikov & Zhabzev p.84-90, 2018.)

### 3.4.4 Concrete houses

It does not make sense to build a house entirely from concrete (unless it is decided to build a bunker). Of course, enormous strength is provided, but from an economic point of view, this is unreasonable. Concrete conducts heat well (almost like a brick), so the external walls will either have to be made very thick or additionally insulated. Concrete is very expensive. In addition, reinforced concrete structures conduct vibration well, which means that an additional set of measures will have to be taken for sound insulation. (The pros & Cons of Concrete 2019)

## 3.5 **Choice of a project**

When choosing a project of a house, the method of construction must be determined. In Finland, there are two ways of executing the project. The first way is a ready-made (standard house kit) project which has already been implemented and everything co-related to it is calculated with e.g. materials, price, color and time. This is also the most economical way as you do not need to spend money on e.g. architect. The second type of executing a project is an individual project, where all drawings are made by the customer itself or architect who was hired by the customer. It can also happen as a mix that customer wants to take a ready-made project and then bring his own architect to implement changes customer wants to see in his project. When the choice of a house project is made, the method of construction is determined. (Osipova, 2010, p.46).

The customer can order a turnkey project, which means that all construction will be carried out by the company to which he turned. At the end of a project the customer will get the keys from a ready-made house with already implemented kitchen, pipes and ventilation communications etc. One company that is building in such a way is ``Hirsi ja Rakennus Siklander OY``; their service includes everything from obtaining a permission to the final cleaning of the site. (Osipova, 2010, p. 46).

There is also a contract which customer can make with Honka, which is a so-called basic contract for construction. It includes the construction of a foundation and frame cover by the company. All other works including electricity, ventilation, interior works, painting and finishing are carried out by the customer. This type of construction lets the customer significantly decrease expenses, entrusting such works to other local companies. (Osipova, 2010, p.46).

### 3.5.1 Planning

Creating a home project is a very difficult and responsible task. It is recommended to have a project from a specialized organization or a specific good specialist. The problem is not only that for the independent production of a house project you will need the knowledge and experience of a design engineer. One of the requirements for project documentation is that its author must have a license for design work and a copy of this license must be attached to the project documentation. (Planning of a house 2019.)

### 3.5.2 Individual project requirements

Individual requirements for the project depend on the specific owners (residents of the house), the size and composition of the family, and their lifestyle. The easiest way to do this is to ask each member of your family to describe his wishes for the future home, and then try to combine all these wishes into something that suits everyone as much as possible.
At this stage, the following factors must be considered:
-The size and composition of the family (gender and age), the frequency of arrivals of possible guests (for planning the number of guest beds).
-Current requirements for the number and functionality of the rooms in the house.
-The prospect of changes in the requirements for home in the future (as a person grows up, his lifestyle and environmental requirements change significantly).
-The number and type of children's rooms depend on the number and age of children (take into account the growing up of existing children and the possible prospects for new ones).
The presence of elderly members in the family introduces special requirements. It is advisable for them to provide bedrooms and all other required rooms on the ground floor of the house in order to minimize the need for climbing stairs. If you work at home, it is necessary to provide premises for a study. You may also want to equip a separate room for a wardrobe, gym, billiards, etc. (Individual project requirements 2019.)

### 3.5.3 Nature and climate in a region

If you buy a finished project, it is advisable to choose one that is designed for the climatic conditions of your particular region. Otherwise, you will either have to adapt it to your climate, which will cause additional financial expenses. If you order an individual project from scratch - there is nothing to worry about, it will be done immediately under local conditions.
If you want to build a house in a cold area, it is advisable to use energy-saving technologies:
-use two or three-chamber double-glazed windows;

- walls with insulation should be made with multilayer;
-minimize the perimeter of building;
-if possible build buildings together, with a common wall;
-use the vestibules in the doorway.
If you intend to build in hot areas:
-open terraces, balconies and loggias are to be constructed;
-consider a project with inner yard garden;
-make exploitable flat roofs covered with soil and growing greenery (gardens);
-use vertical gardening of the walls;
-air conditioning in the house.
(10 Steps to Designing Climate-Responsive Architecture 2019.)

### 3.6 **Steps when choosing a project**

Finding a home project can be one of the most exciting stages in building your own home. Take time to think about what you want from your future home, literally make a list of your priorities. What should be done before building a house, when the objective and necessary priorities of your future home are determined? Begin to consider projects that satisfy them. Considering the plans, remember that many projects allow for internal redevelopment, not affecting the position of the supporting walls - respectively, you can remove unnecessary or create additional internal partitions, change the area of some rooms and change their purpose. If a part of a house is labeled as a “room” or “bedroom,” this reflects only the architect’s view of the abstract occupants of this house and doesn’t concern you directly. Your task is to understand whether you are satisfied with the overall planning decision. At the same time, pay special attention to whether it seems convenient to you to place bathrooms: their position is linked to the engineering part of the project and cannot be changed without corresponding changes in the construction of communications. (How To Build a House: Preparation For Construction – Project Selection 2019.)

At the stage of preparation for construction, before building a house, remember that the ready-made projects of the cottages determine the general technical and architectural characteristics of the building. The personality of house style will largely depend on you. The advantage of ready-made projects is that among them you can always find the one on which your dream house will be built. But if you suddenly decide that you need a unique home that will meet all the exquisite requirements, then you need to create a new concept and a new project using designers’ services. (How To Build a House: Preparation For Construction – Project Selection 2019.)

## 4 **LAND ACQUISITION**

This chapter extends the discussion from the perspectives of construction in different cities to the planning systems in Finland at national, regional and local levels with detailed plans down to the urban. After a review of current debates about urban governance the chapter goes on to analyse the relationships between governance and planning. Every region provides its own regulations on construction of a house. In addition, the regulations aim to promote ecologically, economically, socially and culturally sustainable development, constructive and appropriate construction and the realization of a healthy and comfortable living and operating environment that takes into account the needs of special groups.

## 4.1 **Basics of planning systems in Finland**

As in the other Scandinavian countries, local self-governance is seen as one of the cornerstones in the constitution, and this is reflected clearly also in the land use planning system according to the new Land Use and Building Act (since 2000). The system of Finnish advanced planning framework was built up and defined in the Land Use and Building Act with its accentuation on making a system of all-inclusive administrations. This included a high level of centralization, and nearby organization was viewed as the implementer of national arrangements. The current act includes general objectives as well as all general building regulations.
Land Use and Building Act states:

The objective of this Act is to ensure that the use of land and water areas and building activities on them create preconditions for a favourable living environment and promote ecologically, economically, socially and culturally sustainable development. (Chapter 1; Section 1)

Land Use and Building Act also states:

The Act also aims to ensure that everyone has the right to participate in the preparation process, and that planning is high quality and interactive, that expertise is comprehensive and that there is open provision of information on matters being processed. (Chapter 1; Section 1.)

In Finland city planning varies in different levels. Basically, there are three levels of planning system: municipal, national and regional. Figure 1 shows the levels of land use plans.

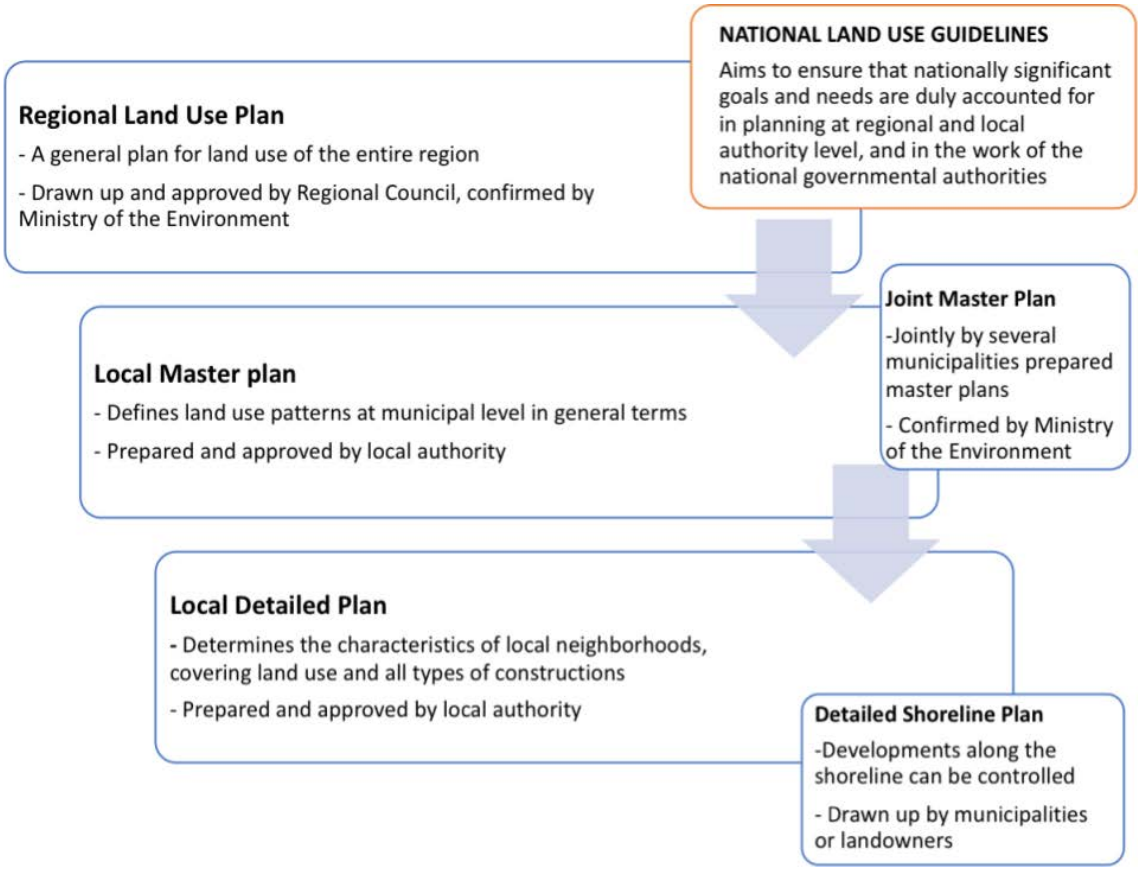



Figure 1 Levels of land use plans

The national government formulates the National Regional Development Targets. Finland has no national plan for the whole country. National Regional Development Targets separate the goals of the Land Use and Building Act and mean to fortify provincial aggressiveness. Alongside the Land Use and Building Act, the National Land Use Guidelines (NLG) Alongside the Land Use and Building Act, the National Land Use Guidelines (NLG) (Valtakunnal-liset alueidenkäyttötavoitteet) are the absolute most critical reports that manage spatial arranging. Planning system is hierarchical, having three levels which are working in cooperation with each other (Behrend, 2017, p.5.)

### 4.1.1 National level

Generally, Finland has no spatial national plan - the national government formulates the National Regional Development Targets. Besides the general legislation and policy statements, regional planning procedures mainly participate as guidelines, where regional, national and local targets coordinated during formation of regional land use plans (Østergård 2004, p.6-14.) The national planning system is determined by government. The aims of the national plan are replenishment of the sources of renewable energy, reducing municipal and transport emissions, decreasing the traffic and improvement of the urban structure. Such adaptation aspects as heavy rains, flooding and storms are also considered in national use of land guidelines. By plan and

decisions that are made following this plan, national importance is considered by local, regional and government authorities. The international considerations are considered in the national land use plan (e.g. ESDP) (Existing Planning Documents n.d., p.1-2.)

### 4.1.2 Regional level

The main task of the regional land use plan is setting out the principles of land use and to designate areas as necessary for regional development. The planning process of regional land use plans follow the standard statutory land use planning procedure according to the Land Use and Building Act, emphasising the role of participation and impact assessment. This standard procedure is described separately later. (BSR Interreg III B project, 2005, p.11.)

The regional land use plan is hierarchically the highest-level statutory land using plan and one of the four statutory instruments of the land use planning system in Finland. (Østergård, 2004, p.6-14.)

Each of regions has its own Council who was chosen and has the main function to adopt, draft and approve land use plans. Regional land use plans should be updated regularly as new objects appear and conditions change (BSR Interreg III B project, 2005, p.12-13).

### 4.1.3 Local level

Local plans were to give the direction to city general plans which gave the structure to nitty gritty plans. Projects and plans of regional cities' structure are being prepared and later submitted and approved by municipalities with a weighty place in the planning system of a city. Compulsory set of rules, regulations and structure plans *(Yleiskaava)* cover all of municipalities. They have inherent legal power for the authorities and put an extensive separation of various types of land use. Customarily, the state has had the privilege and obligation to approve (ratify) civil plans, yet this control is lessening after some time. Special local master plans make controlling of land uses and activities on the local level. Cooperation on the drafting of joint master plans can be decided by municipalities to cover the planning of roads, location of residential areas, workplaces and retail outlets. The control about local land use in Finland is carried out by local authorities who have so-called municipal monopoly. It means that this authority has the right to decide the land use the planning within its territory. In other words, the authority is in charge of the deciding when the area will get a detailed plan. For these functions, the local authority must have prepared expertise and resources (Land Use and Building Act 2003, 5). Landowners have no rights to have a detailed plan of their piece of land. The detailed shore plan is the only exception in this case, where the landowner has the right to

draw up their own ideas. The local authority should approve the detailed shore plan proposal (BSR Interreg III B project, 2005, p.12-13.)

The meaning is that the authority has the major responsibility of main goals setting of the Land Use and Building Act or improving and creating better environment conditions for living and promotion of sustainable development. Practically, the authority is the only agency having the right to carry out the procedural aspects and no one can interfere with it. Raising of the quality of land use planning according to the Act is also carried by the authority. The local master plan, local detailed plan, and the permitting system of the building legislation are the main instruments available for the local authority in implementing the general as well as locally set land use goals. (BSR Interreg III B project 2005, p.12-13.)

You must have an authority planner if the population of the local authority is more than 6000 people (Land Use and Building Act 2003, p.5).

### 4.1.4 Local master plan

Local master plan is used and drawn up as general guide to land use and building in a given area. It may be done gradually in stages or by sub-area. Local master plans may give strategic instructions on both general and regional different levels of land use plans. But, if considered from the other side, they can be highly strict and be a lead of the construction process. Regulations are issued within the local master plan in planning or developing area. These regulations envision rules for the use of land and construction in the current zone and to prevention or reducing of pernicious emissions in the environment. Also, the local master plan gives regulations for the protection of land if it has any cultural significance for culture or the environment of Finland. When it goes to measuring and organization of land use, local master plan is used as a guideline for drawing the detailed local plan. (Land Use and Building Act, Section 41.)

Local master plan must not be hindered, otherwise, a building permit will not be granted. Also, if the area is considered for its needs, the permit will be granted, if the local authority does not provide the compensation for the given harm to the applicant whose permit cancelation was made on the basis of the local master plan. Restrictions for such works as earthworks, landscape changing and trees cutting etc. can be imposed. No action changing the land can be taken without the permit granted. Restrictions for such works as rock explosions, earthworks, landscape changing and trees cutting etc. can be imposed referred in section 128 of Land Use and Building Act (action restriction). Also,the local authority can make a restriction on action; this restriction lasts maximum of five years. It can be extended by the local authority and the regional environment centre for five years if there is a special reason for it (Land Use and Building Act, Section 43.)

### 4.1.5 Local detailed plan

Drawing of local detailed plan (town plan) is made for having a steering of construction and development in order to design areas accurately and contribute to the use of already existing buildings as required (Land Use and Building Act, Section 50). The detailed plan can relate to an entire district or to a small development site or to an entire district. It is only a detailed plan's right to make legal sanction of development establishing on a site or changing the land-use designation, after all land-use changes for larger areas are determined by the master plan. For exceptional reasons, the City has the right to give privileges to certain cases. It is only a detailed plan that has the legal sanction to establish development on a site or to change the land-use designation, although the master plan can determine land-use changes for larger areas. The detailed plan can either relate to a small development site or to an entire district. It depends on the site what scale of the map will be used it may vary from 1:500 to 1:200 (Gordon & Lindroos 2012.)

An authority is in power to impose an area where this local detailed plan is being complied or modified. The maximum period of imposed construction prohibitions is two years. The term can get extended for two more years in case the plan persists to be incomplete. Eight years is the maximum term duration of the prohibition if the reason is that the authority wants to extend the area of the plan. Only after the approval decision has been made and taken into the legal effect, a construction prohibition ceases to be valid. (Land Use and Building Act, Section 53.)

The most of cities are covered by Detailed plans, in case of land changing, land owners should submit their own new plans or submit changed local detailed plans (Gordon & Lindroos 2012).

A detailed plan for the whole district, from initial sketches to actual implementation when building works commence on site, may take as long as from three to five years, and sometimes ten years for very large areas such as Vuosaari, with a projected population of 40,000. An approval for a simple residential house would be quicker, but on average, it takes from around nine to eighteen months. No buildings can be constructed with non-compliance of the local detailed plan. In the case where a developer or land owner has applied for a detailed plan or a material alteration thereto, the City has the right to charge the applicants for all costs incurred in the drawing up of the plan and also associated costs with public consultation, such as advertisements in newspapers (Detailed planning in Helsinki 2012, p.1-4.)

Below you can see an example of an approved detailed plan Figure 2 of Helsinki West Harbour Munkkisaari park district. The current district area includes streets, car parking, open spaces, railway lines, and seashore

detailed plan amendment etc. in a scale of 1:1000. Plot markings list and their meaning:

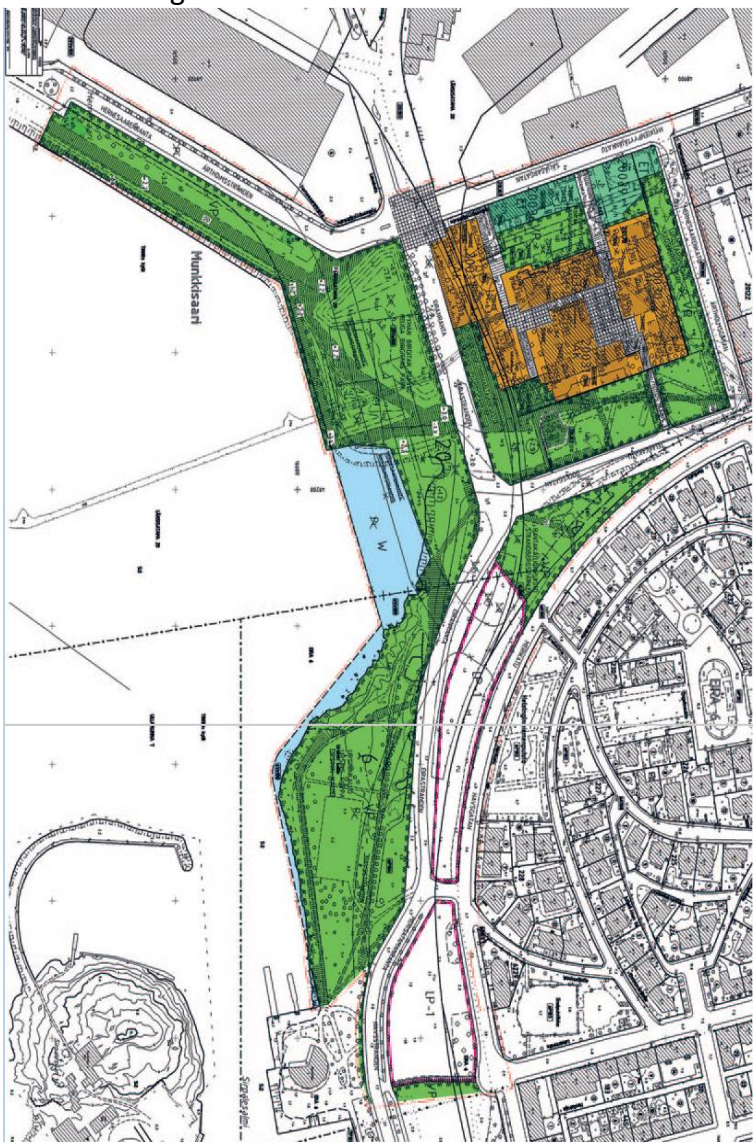



Figure 2 local detailed plan of Munkkisaari park district, Helsinki

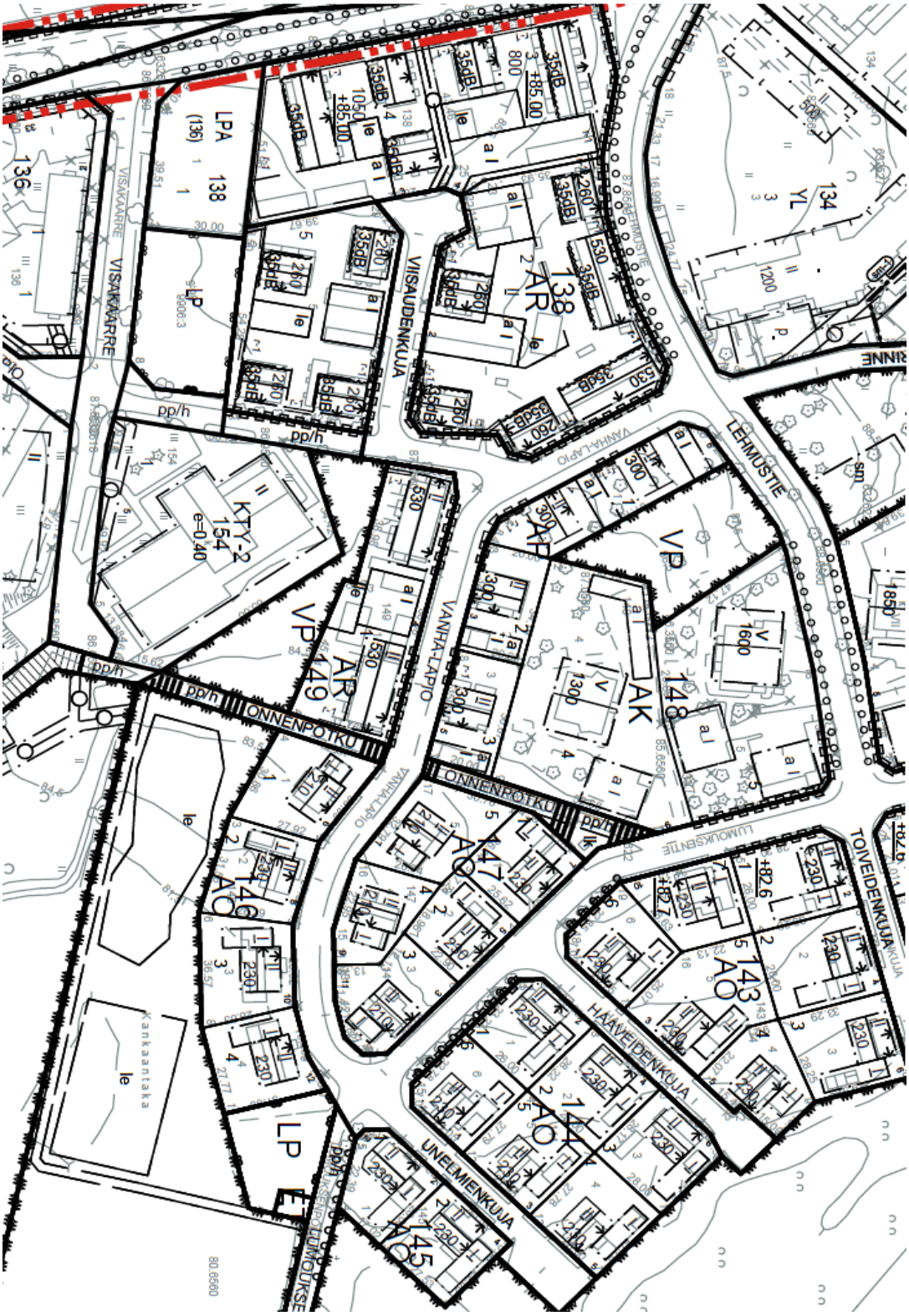



Figure 3 Hämeenlinna

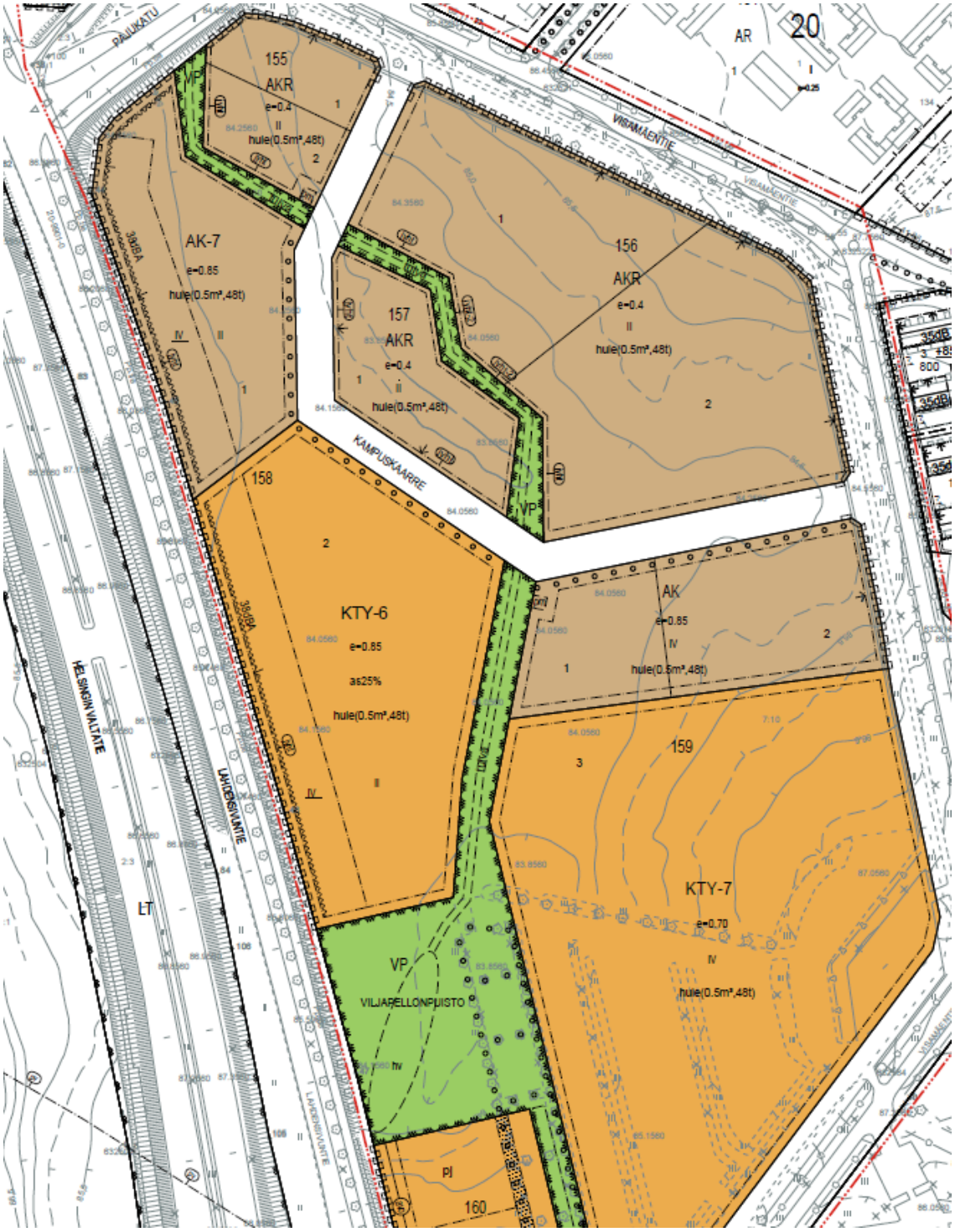



Figure 4, Hämeenlinna

AK - Marking area of apartment blocks.

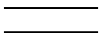
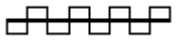
VP - Parks area

W - Water area

AO - Block of private houses.

AR - Block area for terraced houses and other connected residential buildings.

LPA - car parking

VP - Parks area
YL - Block of public local government buildings
 - 3 m line outside the line boundary.
 - The boundary of the block and area.
 - Part of the border of the region.
e=0.70 - Efficiency number, i.e. the ratio of the floor area to the area of the plot / building site.
II - The Roman number indicates the maximum permitted number of floors for buildings.
- Store / plant a row of trees.
 - Indicative area or sub-boundary.
 - Street marking.
VIISAUDENKUJA - The name of the street, road, street, market, park or other public area.
10700 - Building rights in sub-floor squares
 - The arrow points to the side of the building where the building is to be closed.
hule(0.5m³,48t) - The marking indicates that water from impermeable surfaces should be delayed on the property. The bracket in brackets indicates the property delay per cubic meter for each 100 coated m² and the delay time for the delay structures. The system should have a planned overflow.
 - The underlined mark indicates the floor number, building right, or other provision that is strictly used.
 - Construction area.
 - Part of the area reserved for open ditch and / or storm drain.
 - Area where fuel station can be placed.
 - The location of the park transformer.
 - A part of the area that can be used to build balancing tanks or other structures to improve the management of storm water.
 - Planting part of the area.
 - The marking indicates the side of the building site on which the sound insulation of the building's external walls and windows and other structures against traffic noise must be at least 38 dBA.
 - The mark indicates how many percent of the floor area allowed for the building industry can be used for dwellings.
 - An important or suitable groundwater body for water procurement.
 - The part of the street area that is not allowed to be equipped with a vehicle interface.
 - The marking indicates the pages of the block where the buildings and fences are to be built together to protect the

yard from traffic noise. The structures of neighbouring plots must be built together.
(152/7) - The numbers in parentheses indicate the blocks/plots whose parking spaces can be placed in the area.

### 4.1.6 Special provisions concerning shore areas

It is not allowed to build houses in shore areas of lakes or rivers without a local detailed plan that has special provisions about the use of local master plan as the basics of granting a building permit. The charge for drawing up a detailed the shore plan might be taken by landowners. Provided detailed shore plan should be in a form of functional whole. Local authority should be contacted prior the start of a process (Land Use and Building Act, Section 72.)

The shore area plans also precisely define the sizes and types of buildings built in different territories (Nykänen, 2009, p.40).

## 4.2 **Obligations of a foreigner after purchasing of a land in Finland**

Any property owner in Finland is required to pay tax annually, which depends on the municipality and the purpose of the property. For example, a house for permanent residence is taxed at a lower rate, and a cottage for vacation or land for development is higher.
Base rates (vary in different municipalities):
- 0.37-0.80% - for permanent residents;
- 0.80-1.55% - for other categories;
- 1.00-3.00% - for construction projects.

(Finland: Real Estate 2019.)

## 4.3 **Example of land acquisition in Finland**

The following describe a step-by-step diagram of a standard real estate transaction in Finland by In and Out Oy LKV.

Stage 1. Reservation and verification of the facility. Checking the property.
All related issues to the object you found are to be found out and taken into consideration. For instance, if you plan to purchase an apartment, which means becoming a shareholder of the housing company, find out from the house manager what repair or other work the house company plans and how much it will cost. This must be known in advance, as this may entail large financial costs. The repair of water supply and sewage pipes can cost a new homeowner several tens of thousands of euros. Ask in detail about the condition of the property with the owner.
Particular attention should be paid to assessing the condition of the object. This is the buyer's responsibility, which should not be neglected.

After all, if you purchase housing, and then find some kind of malfunction that could be seen during the inspection, you will not be able to get compensation from the seller.
As for hidden defects, the detection of which could well affect the transaction, the seller will be forced to pay compensation to the buyer.
The responsibility of the seller of the apartment for defects, as a rule, lasts two years. The responsibility of the seller of real estate - five years. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

You can open an account in a Finnish bank to pay for the transaction, either in absentia or in person. But in the first case, you will have to personally visit the bank. Only after this will the account be activated. The account is opened in euros. The bank requires a number of documents from a foreigner, which include: passport with, statements from personal accounts with banks in the country of residence, a certificate of employment, a certificate of income.
(Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Deposit.
After the buyer has chosen a specific real estate, it is necessary to reserve it, draw up a preliminary contract and make a deposit.
The preliminary contract specifies the characteristics of the facility, the schedule for making payments, the method of payment, the total value of the facility, the exact date the real estate was transferred to the ownership of the new owner, the amount of penalties for late payments, as well as the amount of the deposit and the conditions for its transfer.
The preliminary contract is signed by the seller and the buyer. At the same time, an official attorney, a notary must be present.
The standard deposit is 3-5% of the value of the object, although in each case it can be negotiated individually. It should be € 2000 and no more than 10% of the transaction amount. If the transaction is broken/canceled due to the fault of the seller, then the deposit is fully returned to the buyer. It is fault of the buyer, then the deposit remains with the seller. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Stage 2. The conclusion of the contract of sale.
To sign the contract from the buyer with a personal presence on the transaction only a passport is required. But the seller must prepare a whole package of documents:
-Certificate of registration of ownership;
-Extract from the Real Estate Register;
-Certificate of encumbrance;
-A map from the Real Estate Cadastre;
-A copy of the urban plan;
-Building permit;

-Certificate of completion of the facility to technical supervision;
-Construction drawings.
The contract of sale is usually drawn up by a Finnish bank or realtor. A copy in foreigner's language can also be made, but only the first version in the state language has legal force.
A sales contract is an agreement that indicates the price of an apartment or other real estate, the condition of the property, the day on which the buyer receives it for use. The buyer has the right and (in his own interests) should familiarize himself with the contract in advance. When signing the contract, in addition to the seller and the buyer, there are a realtor and a notary. The latter is the guarantor of the legality of a real estate transaction. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Stage 3. Payment transaction.
Settlements between the seller and buyer are carried out by bank transfer. By the time of signing the contract of sale, the buyer must transfer to the seller the full amount of the transaction minus the security deposit. If there is no installment plan, then it usually takes two weeks to complete a transaction.
In addition to the transaction itself, the buyer pays a tax on transfer of ownership - 2% for apartments and 4% for real estate, notarial services and realtor services. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Stage 4. Registration of a new owner.
Immediately after the transaction is concluded, the buyer must register it with the city court, if it comes to real estate (everything except apartments). To do this, you need to fill out a questionnaire and send it along with the tax receipt, the original contract of sale and a copy of the passport to the court of the district in which the acquired property is located.
The process of registering property takes an average of about two to three months. Documents must be submitted within six months from the date of signing the contract of sale, otherwise interest will be charged - from 20% of the tax on transfer of ownership. The maximum penalty can be 100%, that is, the amount payable will double. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

A completed certificate of registration of ownership will be sent to the postal address specified by the owner.
As for the apartments in a housing company i.e. movable property, immediately after the purchase, the new owner must declare the transaction to be entered in the register of shares of housing company. To do this, he presents to the manager of the house a contract of sale and a document proving the payment of tax on the transaction. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Additional expenses.
The State transfer of ownership tax fee is 2-4% of the price of the object indicated in the notarial deed.
The tax percentage depends on the type of object. For an apartment, which by law is movable property, you will have to pay 2% of the cost. But objects that are considered real estate, for example, a cottage or just a plot by the lake, are taxed at a higher rate i.e. 4%. (Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Notary's fee.
It is the notary public in Finland who guarantees the legality of the transaction, he certifies the contract of sale. Therefore, one cannot do without his presence. The estimated cost of services is € 100-200.
After-sales registration of real estate is € 119.
(Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

Documents for registration must be submitted within six months from the date of the transaction. Otherwise, you will have to pay a penny, the size of which depends on the time of "delay". Usually real estate registration takes two to three months.
(Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

An example of calculating additional costs:
House area of 98 square meters on its own plot of 15 acres by the lake, without its own shore. The seller is a private person. The market value of housing is € 189,000.
State Transfer Tax: € 7,560 (4%)
Notary expenses: € 120
Registration in the property register: € 119
Total Cost: € 7,799
All additional costs are calculated depending on the value of the real estate or property indicated in the contract.
(Ekaterina Holodova, In and Out OY LKV employee. Interview June 25, 2019)

# 5 BEFORE CONSTRUCTION STARTS

## 5.1 Prerequisites for construction in Finland

A list of general prerequisites for construction guide the construction and create the basis for it as follows:
-The Law on Land Use and Construction is a general building code in force throughout the country.

-Land Use and Construction Regulations contain more detailed norms within the framework of the law.
-Construction regulations complement the previous regulations, taking into account local conditions.
-Construction rules are detailed rules for the construction work on the territory of the municipality.
-The Finnish Building Code is a detailed building guide.
-Construction supervision means monitoring and guiding construction. (Nykänen, 2009, p.37)

## 5.2 **Preparations for the implementation of the construction project**

Before proceeding with the actual construction, it is important to determine in advance the existence of common prerequisites for construction, as well as clarify the possibilities for the implementation of the project and its time schedule. Only the acquisition of the property does not guarantee that construction is permitted on the relevant territory. In addition, it is necessary to find out whether special permits or other measures and documents are required for construction. Below are the most important circumstances that should be considered when implementing a new construction. Since each construction project is an independent whole, many other issues may need to be clarified depending on the size and nature of the project.
The following aspects are to be done before construction:
— the choice of the general designer
— what is the situation with the planning of the acquired territory and under what conditions the construction is allowed
— what is allowed to be built and on what legal grounds
— what type of building is it allowed to build and how it should be located on the site
- road traffic, power supply, domestic water supply and wastewater treatment
- construction cost estimate overhead
- creating a realistic construction schedule
- choosing a translator or a representative with a knowledge of the language who can serve as a link at various stages of the construction project implementation (Nykänen, 2009, p.39.)

## 5.3 **About the place of construction**

If the construction is carried out on the territory that is included in the development plan or in the coastal development plan, the requirements for construction are mainly determined by the plan in some detail. The municipal construction regulations contain the most important rules and regulations for various territories. Usually, construction outside the territory included in the plan is not burdened with detailed norms,

although, for example, the law requires that the construction site be at least 2000 m2. Municipal construction regulations have different requirements regarding the size of the site for construction, and the minimum sizes range from 2,000 to 10,000 m2. The building plan also accurately determines the size and types of buildings being built in different territories. Construction on a territory not included in the development plan (the so-called low-density area) usually incurs additional costs, such as road construction, connection to power supply and wastewater treatment can be, depending on the location of the object, very expensive. In such territories there is no municipal equipment built by municipal authorities, and land owners themselves pay for the costs of its construction and maintenance (Nykänen, 2010, p.40).

# 6 CONSTRUCTION PERMIT

The main rule is that the construction of the building requires a building permit. In simpler cases, there may be permission to work or to submit a notice. Such activities as excavation, construction work, making changes in the landscape and cutting of trees may require permission for landscaping work.

Permission is required for the following activities:
-Construction of the building itself;
-Works on repair and reconstruction which can be equated to construction of a building;
-Expansion of the building;
-Increase of floor area (for example, reconstruction of cold attic Room in warm);
-Construction work, if it affects the safety and health of users of the building;
-A significant change in the operational purpose of the building or its part.

Each construction project is individual and represents a complex of measures, the final decision on the necessity of obtaining permits for which is accepted by the construction supervision body. As mentioned above, the building is not considered a small structure, light construction or construction, unless it has a special impact on land use or the environment. In the case of holiday houses and cottages intended for living, it is always obvious that construction requires obtaining a building permit. On the contrary, as regards ancillary facilities such as barns, warehouses, the practice is often different in different municipalities and it may be that the same building in one municipality will require a building permit. During repair work and reconstruction, the main attention is drawn to the volume and quality of work, as well as costs. Extensive

overhaul of the building as a rule requires obtaining a building permit. On the other hand, if the project includes only cosmetic repairs that do not affect the structures, construction works can be carried out without building permits and other permits. Before the beginning of repair works it is necessary to find out in the municipal body of building supervision at the location of object, whether it is required to obtain permission. Under the change in the operational purpose of a building is understood, for example, reconstruction of an office or a garage in a dwelling. Such conversions usually require a building permit if the change is of a significant nature. The reconstruction of a summer house in a dwelling object intended for permanent residence also implies the necessity of obtaining a building permit (Nykänen, 2009, p.43-44.)

## 6.1 **Applying for a building permit and the documents required for the application**

It is advisable to give the Chief Designer the task of preparing the actual applications and filling out the required forms. This is a shortcut to the chief designer. The need for cooperation is all-in-one, and it requires seamless cooperation of all parties. The chief designer should be an active contact with the authorities throughout the authorization process. Significant aspects of a license search include:

- Be timely in applying for a permit - this will not slow down or interfere with the construction project;
- Have enough time for the permit process;
- Hear your neighbours on the project well in advance;
- Contact the licensing authorities as early as possible - the permit process is progressing well with them;
- Define the so-called building design checkpoints that do not progress before the permits are obtained. This is a good thing to do, especially if the licensing process encounters difficulties;
- Prepare for the follow-up required by permission;
- Use experts to help you save time and effort. (Lupahakemus 2019.)

### 6.1.1 The main drawings

The main drawings included in the application for a building permit include the drawing of the station, the ground, and cutting and facade drawings. The main drawings must be properly designed. The drawings may not contain old approval marks, old labels or old markings. The design of the building project must be made by designers with competence in relation to the complexity of the design task. The designer must certify the main drawings with his signature. If the main designer is a person other than the designer of the building, the master designer must also ensure that the plans are signed (Lupahakemus 2019.)

### 6.1.2 Area drawings

Site plan on a scale of 1: 200 (in the plan area) and 1: 500 (in other areas) the elevation system used (N60 or N2000) must also be marked on the area drawing. The area drawing must show, among others: existing and demolished buildings and their uses, distance from the new building to its borders, its main dimensions and altitude, as well as buildings in the surrounding area for its intended use, water supply, waste management, etc., wastewater system, road access, parking and yard arrangements, as well as elevation and vegetation of the site and its surroundings. It is possible to order a map of the municipality from the surveyed areas and the altitude curve from the entire municipality area for the layout drawing. (Lupahakemus 2019.)

In the beach area, the perpendicular (shortest) distance to the shoreline from the shoreline must also be indicated. (Lupahakemus 2019.)
In the station plan area, the plot must show the plot of the entire city plan and the surrounding area to an extent, as well as all official city plan markings and regulations for the object concerned with explanations, boundaries of the blocks and street areas, and street names and altitudes. (Lupahakemus 2019.)
The layout drawing must include the parking space and floor area calculation, unless they are made as separate reports. (Lupahakemus 2019.)

The floor plan should be drawn from all floors of the building. In addition, a roof ceiling drawing is required if the roof or roof fittings are not sufficiently visible from the facade drawings. Access for disabled persons and access must be shown in the base and/or station drawing. The floor plans have significant fire compartments. (Lupahakemus 2019.)
The chimney cut should be presented in scale 1:20. (Lupahakemus 2019.)
The cutting drawing must be made from all the points necessary to demonstrate the structure and properties of the building. The design drawing must be accompanied by a statement of the types of structures used, with their U values. (Lupahakemus 2019.)

Facade drawings are made from all sides of the building. Adherence to adjacent buildings and the surrounding terrain must be sufficiently broad. The adaptation of the building to the terrain and changes to the terrain must be presented (the original elevation of the terrain is shown in dotted lines). The colours and materials of the facades and building elements must be presented (if necessary by colour scheme). (Lupahakemus 2019.)

In the station plan area, the connection of the new building and the terrain to the conditions and buildings of the neighbouring plots shall be presented as a street facade drawing. All bottom, cutting and facade drawings must be on a scale of 1: 100 (drawings of smaller buildings in

single-family homes, financial buildings, etc. can be on a scale of 1:50). The drawings of the alteration and renovation work show the situation before the change and repair work and the plan for the modification and repair with appropriate marking (Lupahakemus 2019.)

### 6.1.3 Consultation of neighbours

According to The Land Use and Building Act, the result of the application for authorization must be notified to the neighbour. The neighbours referred to in the Act are the owners and owners of adjacent and opposing properties. Consulting the neighbours should be done by the license himself if possible and thus saving costs. When conducting a consultation, the applicant is responsible for ensuring that the consultation process is conducted correctly (full drawings are presented in full and given the opportunity to express their views). In addition, the building project must be informed on the site (Land Use and Building Act §133.)

### 6.1.4 Building supervision

The task of building supervision is to ensure compliance with the regulations and regulations of construction. During the construction planning phase, supervision is implemented through a prior authorization system, inspection of building plans and, if necessary, requiring special plans. Supervision focuses on key safety and health aspects as well as overall design quality (Lupahakemus 2019.)

### 6.1.5 Permission is obtained

After the permit is granted, the sole purpose is to guide the design in accordance with the terms of the building permit. By obtaining a permit, the project is limited to the terms of the permit. The authorities make their decisions in cooperation with the applicant and in accordance with the objectives set (Lupahakemus 2019.)

## 6.2 **Validity and extension of a permit**

Construction work must be started within three years or completed within five years; if these rules are not met, permit expires. The maximum period that the permit or approval can be extended by the local supervision authority is two years if all legal conditions are provided and rules are still met. If the construction process is not completed, these periods may be extended by a maximum of three years at a time (Land Use and Building Act §143.)

# 7 PROJECT AND PROJECT PLAN

### 7.1.1 What is a project?

The Business Dictionary defines a project as a "planned set of interrelated tasks to be executed over a fixed period and within certain costs and other limitations". Project plan sets the goals and ways through which it will be delivered. It is the combinations of such tasks as overall design, coordination and supervision of the project from start to finish. The main aim of which is to meet clients' requirements make it completed and undertaken in a set schedule, resources, performance and budget. Every project is defined and has such characteristics as goal or objective, time of beginning and end, tasks and resources. A project is never determined as a short one as temporary can mean any length of time (PMBOK® Guide – Fifth Edition 2013, p.2.)

A creation of result is a straight purpose of a project, which can be intangible and tangible. Therefore, some parts of different projects may get repeated by other projects, but it will not change the unique and fundamental characteristics of the current project. For instance, two semi-detached houses might be built with the same materials and teams. But their circumstances, situations, different stakeholders, design and location will stay different which makes this project unique (PMBOK® Guide – Fifth Edition 2013, 2-4.) Every project is determined by deadlines. Every phase and task have a deadline, or, in other words, schedule that the project follows (PMBOK® Guide – Fifth Edition 2013, p.2.)

### 7.1.2 What is a project plan?

A project plan should give answers to the next basic questions related to the project:

When? - What are the project time frames? When will the key points be fulfilled - milestones?

Why? - Why is the project being sponsored? What is the task related to the project?

What? - What needs to be done to successfully complete the project?

Who? - Whom to bring to work on the project and for what each of the participants will be responsible? In what format will they be organized?

Project may mean a product which is a part of other item, service, and improvement of an already existing product or result. Identifying requirements, addressing needs and balancing the working processes such as:

- Quality
- Safety plan
- Work methods
- Risks

- Resources
- Schedule
- Budget

(PMBOK® Guide – Fifth Edition 2013, p.4-6).

The whole project team is to be present while process of plan making. It ensures that all objectives, goals and approaches are followed by everyone´s commitment. In general, the project plan approval is done by the steering group or the project owner.
The structure of handling things like changes to the project, communication methods and requirements, financial resources, risks and approval processes is to be provided in project plan. It also provides a baseline for the project including detailed project requirements, human and financial resources, communications, projected time lines and risk management (What is a project plan? 2019.)

Poor documentation can lead to disastrous results for all project stakeholders. Formal project plans establish detailed project requirements, including human and financial resources, communications, projected time lines and risk management. A project manager is responsible for project process and implementation and should know exactly plan content to have time management according to timetable. The project plan should be proportional to the project size. A project plan is a formal agreement between the project procurer and developer. It documents and ensures mutual project stakeholder approval while assisting management and technical teams with project tracking (What is Project Management? 2018.)

Today, project planning has entered a new era and is enchased with the special developed software for each separate project. It is done to develop plan and keep all team members aware of the current situation and to let them know the progress of a project. It makes easier to follow the completion dates and keep a track of impact factors that can affect the progress of a project. The development of planning software may be done for the use of one separate project or company (What is Project Planning? 2019.)

### 7.1.3 Project history

An institute for project management has been created a long time ago, and there was an updated knowledge books and guides on how to manage projects, or even before the existence of Gantt with his self-named scheduling diagrams, several examples of colossal projects that are successfully completed are provided by history (A Brief History of Project Management 2014).

The Coliseum, Great Wall of China, Pyramids of Giza and the Gothic Cathedrals of Europe are great examples of such projects. It could be

exceptions, but everything is not that easy, and projects were delivered in the same way with similar characteristics to today´s projects. Such construction projects required efficient concentration and utilization of knowledge resources, as well as management of these projects that influenced fulfilled modern knowledge criteria of modern project management (Project Management History – A Story of Evolution 2019.)

Historians completed researches on previous projects and give benefit to modern projects from it. Project at its core, is concerned to create the most convenient environment where people can work together to achieve a mutual objective, to deliver successful projects on time and on budget. Humans have been working on improving and refining the practices of project management throughout the world history (Project Management History – A Story of Evolution 2019.)

## 7.2 CONTENT OF PROJECT PLAN

### 7.3 Background

Any project requires a project background in order to explain the problem of existing situation. It basically describes the case of project and organisational background where the current project takes place. Reasons and possible preliminary studies and their results might be explained there. This section also tells what market it aimed to and gives a discussion on the situation before the launching of a project. It is usually a short and simple statement of the course of your project. It quantifies boundaries, problems or benefits after the successful implementation of a project. It also defines what matters belong to the project and which is not. This section is important as the one of the purposes is to introduce the topic and provide interesting information concerning the problem. (Project background, Aim of the project, Problem definition, Project justification and Scope of project, 2016.)

### 7.4 Goals and objectives

The very first step in preparing a project in any field is to define the goals and objectives of the project. This step determines what we want to get after the project is completed, and what actions we need to take to achieve this goal. If the members of the project team, including project managers, do not pay enough attention to this important process, or do it incorrectly, it may occur in the end that it led to a failed completion of the project (FundsforNGOs 2019, p.1-7.)

Incorrectly defined goals and objectives or goals without objectives, lead to the fact that in the process of project implementation there are cost overruns, battles for the territory, clarification of relations between members of the project team, non-fulfilment of intermediate control

points and, as a result, unsatisfied customers (FundsforNGOs 2019, p.1-7.)

Goals and objectives should be clear statements of intent. Each goal must have its own aspiration, which affects the result of the project. Goals and objectives must be measurable (FundsforNGOs 2019, p.1-7.)

### 7.4.1 Goals

Goals should answer the “What” question.
A goal is a statement of definition of what you plan to do in a project. It gives an idea to the reader of what problem your organization intends to address (FundsforNGOs 2019, 1-2.) Goals are general intentions applied to the project. In this process, the goals answer the question. In other words, what will the project do? Projects can have more than one goal, and many objectives for a single goal. Do not confuse goals with objectives (Define Goals and Objectives, p.1.)

### 7.4.2 Objectives

Objectives should answer the question.
Objectives are specific actions that define specific implementation and strategy which lead to the fulfilment of a goal. Each goal will have one or more objectives associated with it. Unlike goals, objectives are more specific and measurable. The objective defines “how” the process will be executed. (Define Goals and Objectives, p.1.)

This ensures that the objective becomes measurable, and the result of the project will be considered as part of the operation of this objective. At the same time, each objective will become a measurable intermediate stage of the project (Define Goals and Objectives, p.1.)

## 7.5 **Timetable**

### 7.5.1 How to make a construction schedule?

The construction schedule is a phased plan for the implementation of a given amount of work in a specific time frame. Thanks to competent planning, it is possible to complete the work on time and without exceeding the budget. All you need here is a paper with a pen or Excel.

You can make it yourself or by hiring a project manager (Definition of Construction Schedule 2019.)

Planning is based on tasks and their time dimension. The duration of the task should be based on some factual information. The duration is determined by working procedures. The workbook is based on Ratu files, a timetable, personal experience, or internal files. (Koskenvesa & Salhlstedt, 2013, p.78).

1. Based on the scope of work, determine the time for each stage. It is necessary to consider state-approved regulations. They are listed in standard documents, building codes and regulations.
2. From the requirements put forward by the customer to the object, determine which technologies and methods you intend to use during construction. Calculate the total time of work. It is possible that the chosen construction technology will allow you to combine several stages of work in one calendar period. Create a calendar plan in Excel spreadsheets.
3. For each type of work, calculate the necessary material and intangible resources; namely, the composition of teams and units, the number of hours required for each type of work, materials and equipment. On the basis of technological requirements and labour laws, it is necessary to correlate production processes with the schedule of materials supply. The goal of such planning is to speed up production as much as possible while minimizing costs and downtime.
4. Based on the deadlines for each stage of work, enter the target dates. It is advisable to make daily schedules of all production processes. It will be easier to track current problems and take effective measures to solve them. If the project is complex, then you can create several graphs based on the possible number of different works. Consider all the risks and prepare an action plan for each critical situation. In this case, the rapid replacement of one schedule by another will allow you to save the planned deadlines for the work. (How to schedule work 2019.)

### 7.5.2 Schedule structure

The actual schedule structure of your specific project depends on many factors including:
-size and degree of difficulty of the structure;
-site condition;
-weather conditions;
-material and contractor availability;
-number of people in crew;
-effective communication and scheduling;
-the knowledge and experience of people managing the project;
-changes you make to the contract after construction has begun.

(SAMPLE SCHEDULE for Individual Project - Construction Management.)

## 7.6 **Budget**

When calculating your budget cost factors for your project is to be taken into account are the following:

• Direct inputs: such parts of construction as vehicles, materials, labour, energy, etc.

• Indirect inputs and overheads: These include depreciation, administrative expenses, taxes, fees, etc. These are generally fixed.

• Productivity: Refers to the efficiency with which inputs are converted into outputs (e.g. through new technical solutions, increased labour productivity, or more effective outcome (Elements of Construction Industry Prices 2019.)

A project budgeting is the definition of the cost of the project as a whole and of the work performed in the course of its implementation, as well as the process of forming a project budget that contains approved cost allocation: expenditure items, the execution time of processes, activity types, etc. The structure of the budget defines the chart of accounts, cost-accounting of the project: traditional (accounting) and/or specially designed for a specific project chart of accounts management accounting. But in any case, the project budget consists of the estimates of revenues and cost estimates. In turn, the cost estimate includes the management reserve, the estimate of unforeseen costs and the main operating budget, which is a set of expenses for resources that can ensure the implementation of project work. Project Budgeting is performed on the initial stages of project planning and usually in parallel with the development of the project schedule. The steps associated with budgeting are highly dependent on both the estimated lengths of tasks and the resources assigned to the project. Budgeting serves as a control mechanism where actual costs can be compared with and measured against the budget. The budget is often a fairly set parameter in the execution of the project. When a schedule begins to slip, cost is proportionally affected. When project costs begin to escalate, the project manager should revisit the Project Plan to determine whether the scope, budget, or schedule needs adjusting. To develop the budget, the applicable cost factors associated with project tasks are identified. The development of costs for each task should be simple and direct and consist of labour, material, and other direct costs. The cost of performing a task is directly related to the personnel assigned to the task, the duration of the task, and the cost of any non-labour items required by the task (Meyer, Kolb 2015, p.1-4.)

### 7.6.1 Cost estimation

Construction has a reputation as a field of activity in which the deadlines for the commissioning of objects are constantly violated and the real costs exceed the expenses provided for by the estimates. Identifying the causes of violations inevitably leads to an analysis of the conditions of the project and the risks that have influenced the different stages of its life cycle. Therefore, it is advisable to identify the sources and types of risks to provide a basis for a realistic assessment of costs and its adjustment considering possible deviations in project implementation (Koshelev 2014, p.1)

The developer´s solutions considering costs should be objective and cost-conscious from the beginning of the project, decisions made by the developer must be based on realistic cost information from other construction projects. The developer should identify and understand the cost implications of the decision choices considered at various stages of construction. Estimating is made on an early stage of a project; it gives an opportunity to the developer to lead designers to the set and estimated goal while planning. The design process should be steered to achieve the goal (All About Construction Cost Estimation n.d.)

When making a design of a future house, the cost plan must be checked at each stage of design. Any variation or change must be strictly controlled by the project team and owner. It is known that 80% of costs is determined at a design stage and other 20% of cost will be known at the construction stage. The designer must be aware that he does not have authority to increase the accepted costs. If costs increased, it should be balanced by savings on another. (Code of Practice for Project Management for Construction and Development, p.95-96 2019.)

### 7.6.2 How to calculate the construction budget

The approximate amount required for the construction of the house can be calculated using a simple scheme. It is best to draw a table in which there would be all the necessary graphs with a place where you can enter the price. The table must be compiled by breaking it into the following columns:
-Box of a house. This should include the cost of monolithic work on the construction of the foundation, ceilings, frame, roofs, windows. Think of materials as they will greatly affect the price of a house and works overall. Be sure to take into account the fact that in the future house ventilation ducts will be deducted;
-Interior decoration. This group of expenses is much larger. So, it takes into account internal heating networks, water supply, screed, high-quality flooring along with the installation of the baseboard, wall and ceiling decoration. For internal work, it is necessary to provide for the costs of installing and finishing bathrooms, kitchens (along with

appliances), all doors of the house (along with accessories). If the house has two floors, it will be necessary to provide funds for the installation of stairs. The installation of a fireplace is also possible;
-The next column is the arrangement of engineering communications. This is water supply, sewage, electricity, gas supply;
-Territory. Further, the obligatory column of the budget for the construction of a house is the improvement of the territory. This includes garbage collection, installation of a fence, gates and paving. Some country houses have decorative lighting. The drainage system must be installed without fail;
-The last column of the budget at home is the development of documentation. This is, in fact, the project, various permits, as well as documents proving the commissioning of the house. Keep in mind that collecting such documentation is quite painstaking work; (How To Calculate a Budget For Building a House 2019)

Taking all these features into account when calculating the budget for building a house will help to create a real picture of planned costs and avoid cost overruns. (How To Calculate a Budget For Building a House 2019).

## 7.7 **Project organization**

The project organization usually created for large or long-term projects. The project organization is responsible for ensuring that the project assigned to achieve the objectives and that pre-agreed schedule and budget are maintained. The project organization's tasks also include project documentation and project communication both internally and externally (Tekes 2010). It is important that in the process of involved parties' roles and responsibilities are clearly defined (Silfverberg, p.48 n.d.).

The project plan describes all entities which are related in some way to the process. These entities include, for example, the project team and its members as well as project manager, steering group and support group. The plan describes the project team's working methods, roles and tasks in the process. Cooperation networks are also presented, as well as any services purchased. (Tekes 2010). When the steering group and the project group is already established, part of the process of the organisation is already ready (Lööv 2002, p.75 n.d.).

A project organization has an aim of creating a pleasant environment to foster interactions among the team members with a minimum amount of disruptions, overlaps and conflict. Several steps on a level of project management to create the special organizational structure for each unique, as every project has its own specific characteristics and design and should consider how it will operate in this organizational

environment and the level authority the project manager is given. Every project has advantages and disadvantage, depending on them, the project should take various forms. When the project begins and initiation phase comes in, there usually comes uncertainty. A high level's project organization number one aim is to reduce this confusion and define relationships among members and their external environment. The structure defines the authority by means of a graphical illustration called an organization chart. A properly designed project organization chart is essential to project success as it shows each member of the project and its place in the project structure. It usually forms a pyramid, where members are located towards the bottom and individuals who have more responsibility are located closer to the top. It is the relative locations of the individuals on the organization chart (Figure 5) that specifies the working relationships, and the lines connecting the boxes designate formal supervision and lines of communication between the individuals (Project Management Organizational Structures - PM4DEV 2016.)

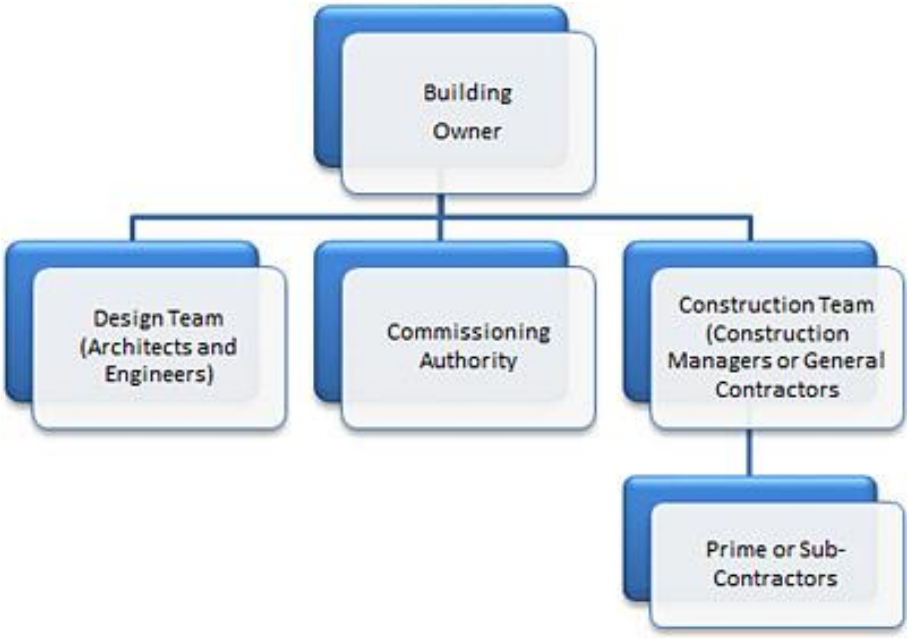



Figure 5 Typical project organizational chart (Commissioning Authority 2019).

### 7.7.1 People involved and process

#### 7.7.1.1. Owner/Client

An owner or clients is defined as the person or entity which owns the project. An owner may also be the general contractor for the project, provided he has experience to do so. The inexperienced owner should avoid assuming such a responsibility, but if he wishes to do so, it should be considered employing a construction manager rather than a general contractor (Parties to the construction project n.d.).

#### 7.7.1.2. Building inspector authority

The construction inspector has a role of an owner's representative and the eyes and ears of the architect of record. Their job is to confirm the construction is consistent with the plans, specifications and building code. They consistently review plans and use building equipment to ensure that they meet codes. They visit the site using photographs to perform future feedback related to the findings. The building authority grants a building permit. (Parties to the construction project n.d.). The setting out of the location and level of a building, checking them after completion of the foundation work, and the inspections to be made during the course of the work are specified in the permit concerning construction and inspected by authorities. (Finnish building code, Section 150). Every municipality regulates costs of authority differently, sometimes it might be free. (Organization of construction in Finland 2019.)

#### 7.7.1.3. Chief engineer

The main tasks of the chief engineer (chief architect) of the project are to ensure the high technical and economic level of the designed facilities and the quality of the design and estimate costs associated with each project including materials, costs of labour, and time expended. The chief engineer (chief architect) of the project bears the responsibility established by law for the technical and economic level and architectural solutions of the facilities under construction, for the quality, timely development and completeness of the design and estimate documentation, correct determination of the estimated cost and priority of construction, for the achievement of design indicators by enterprises in a timely manner, as well as for the performance of all the duties approving budget plans, negotiation of contracts with venders, coordinating with engineering team and drafting reports for review by the company´s board of executives (Chief Engineer Job Description 2019.)

#### 7.7.1.4. Construction manager

Construction manager ensures that the building is constructed according to plan. When carrying out all construction work requiring permission or approval by the authorities, it is necessary to have a person in charge of the conduct and quality of work (the responsible head of the work). Depending on the nature of the construction site, specialized supervisors in certain areas may also be required. The responsible head of the works and the heads of the works are approved by the municipal body supervising the construction. Construction work cannot be started or continued if no responsible head of work is appointed. The responsible

head of work is responsible for notifying about the start of construction, for the proper conduct of construction work in accordance with permits and for the presence of the necessary drawings on the construction site, as well as for carrying out the prescribed inspections. (Nykänen 2009.) The responsible supervisor (construction manager) is constantly in contact with the municipal authority, who overwatches the whole construction and checks the readiness of every stage. (Organization of construction in Finland 2019.)

#### 7.7.1.5. Subcontractor

A subcontractor is used as a general term for a specialized professional with a certain skill who is engaged by the contractor. For each phase of construction process there is a different subcontractor. A subcontractor must have required skills to follow and provide responsible work with other subcontractors. Such works can be excavation, ventilating, heating, plumbing and air conditioning.
Job responsibilities of a subcontractor include:
-Ensuring all safety protocols are followed
-Providing quality craftsmanship to the set standards
-Following the blueprint guidelines for a specific building
(Difference Between a Contractor & Subcontractor 2019.)

## 7.8 **Risk management**

The main constraints include the timing, budget and content of the project. As project risks can affect these limitations, a change in the content/deadlines/budget of a project leads to an increase in project risks. Therefore, it is necessary to efficiently manage both the content and the timing and budget of the project to reduce project risks. Good risk management also allows stakeholders to have increased confidence in the organisation's corporate governance and ability to deliver. (Management of Risk – Principles and Concepts 2004, p.7.)

To determine the impact and probability of risk, a scale from 0 to 1 is used, where: 0 is known that the event will not exactly happen; 1 is known that the event will exactly happen; 0 and 1 are extreme values, they are not considered, since the risk has a probabilistic nature. If something does happen, it is not a risk, but a fact that has happened; in this case, it is not risks that need to be managed, but changes. (Shkurko 2014, p.7-9.)

When determining the impact and probability of occurrence, it is necessary to use the method of expert assessments, since the product of the project is unique and, accordingly, there are no statistics. We can manage risk throughout the project (Figure 6). But the closer a project comes to completion, the more difficult it is to manage risks. In this case,

it would be appropriate analogy with archery. When aiming, the trajectory of the arrow can be controlled. But when the arrow is already released and flies, it cannot be controlled at all (Shkurko, 2014, p.7-9.)

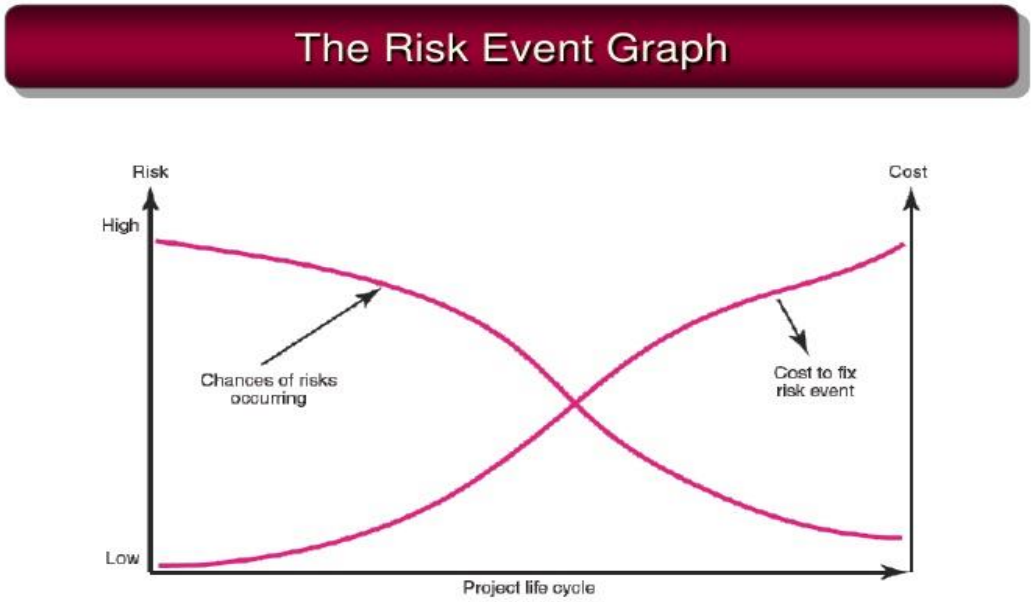



Figure 6 Risks management capabilities and risks damage

With damage resulting from a risk event, the opposite is true: for most projects, the damage increases by the end of the project. For example, if you build a road near a river, the damage will be small in case of flooding at the beginning of construction. But if the flood happens at the end of the project, the damage will be significant. As for positive risks, the positive effect, on the contrary, decreases when approaching the end of the project. For example, there is a positive risk of reducing the cost of purchased raw materials. If this decline occurred at the beginning of the project, the positive effect is high, if at the end, the effect will be lower (V. Shkurko 2014, p.7-9.)

Identifying and assessing risks and then responding to them is one of a main parts of risks management (Management of Risk – Principles and Concepts, 2004, p.7-8).

The process of risk managements consists of:

1. Planning of risk management
2. Identifying risks
3. Performing qualitative risks analysis
4. Planning of risks responses
5. Monitoring and controlling of risks

(PMBOK 2019.)

### 7.8.1 Possible risks and how to avoid them

Risks associated with insufficient development of materials and information about the capital construction object before the start of design.
The risk arises already at the stage of deciding on the construction of an object, especially when choosing a site for its location, obtaining objective information about the construction site, about the possibilities of connecting the object to the engineering supply networks and about the corresponding urban planning restrictions. It is also impossible to exclude from the development of transport accessibility to the designed object and the environmental component. Having received complete and reliable information, you can decide on the continuation of work and draw up a design specification. (Construction risks and possibilities of their minimization 2015.)

Risks associated with the formulation of the problem in the Terms of Reference for the design of a capital construction object.
Development of the Terms of Reference has a big role in the timing of the design work, their cost, as well as the cost and construction time in general. At the drafting stage of the Technical Requirement, the customer (together with the designer) should be aware of what he wants to build, based on the existing town planning restrictions on the construction site and its engineering and geological structure, what materials, engineering systems, equipment, etc. to use. In the Technical Assignment it is necessary to work out and describe the architectural and structural solutions, all internal engineering systems of the building, security systems (including fire protection), dispatching and automation of engineering systems, monitoring of the main building structures. (Construction risks and possibilities of their minimization 2015.)

Risks associated with the excess of the budget (budget) of the project.
This type of risk is directly a consequence of previous ones. Already at the stage of building a building, objective circumstances that could not be identified at the early stages can be identified. In addition, the insufficiently developed project or the decision of the customer to change something in the approved project at the construction stage may lead to a significant increase in the cost of the object. (Construction risks and possibilities of their minimization 2015.)

Risks associated with changes in decisions in the design process.
In the design process, situations often arise when the customer, together with the designer, must make decisions that are not specified in the Terms of Reference, make changes to the design documentation and Terms of Reference. Adjustments can be associated with the optimization of design solutions to ensure greater construction efficiency

and reduce cost indicators without sacrificing the reliability and safety of a capital construction object. The adjustment may also be caused by insufficiently thorough work on the previous stages. Sometimes the design decisions must be changed to more complex and expensive, which increases the cost of the building, the timing of times, the design documentation and construction in general. For example, an insufficiently elaborated task for conducting engineering-geological surveys may have the effect of changing the decision on the foundations of a building in the direction of higher prices, if it turns out that the engineering-geological structure of the site is more complicated than originally thought (Construction risks and possibilities of their minimization 2015.)

### 7.9 **Conclusions and completion of a project**

The completion of the project involves the implementation of all the formal procedures stipulated by the standard for the legal transfer of project documentation to the user after the completion of all project tasks and the achievement of all objectives. Thus, the completion of the project involves the completion of all project tasks, as well as the resolution of all controversial issues, the design documentation of the project and its delivery to the archive.

Project completion is the process of formally completing the work and closing the entire project.

The completion of the project may include the following procedures:

-Delivery of project results to the Customer;

-Final assessment of the financial situation (post-project report);

-Final project report and project documentation;

-List of open questions and final works;

-Resolution of all disputes

-Dissolution of the project team

-Documentation and analysis of the project experience.

-As part of these processes, the main management and substantive project documents are archived for use in other projects

(Project Management Processes 2019.)

## 8 **CONSTRUCTION PROCESS IN FINLAND**

Simultaneously with the building permit (rakennuslupa), the Construction Department (rakennusvirasto) issues to the builder of his own house another compulsory document that looks like an ordinary construction diary. Each page of the notebook corresponds to a specific stage / type of construction work and is filled in by the direct performer of each type of work: foundation builder, electrical installation contractor, plumbing contractor, roof builder, heating system, etc. All

stages of the construction work must be accepted by the responsible construction supervisor, and each page of a notebook of construction work should be sealed with his signature. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

When project for the house has been chosen, the project has been approved by the regional Construction Department (rakennusvirasto), and you have a building permit issued by the department, and you have already managed to clear the area from shrubs and unnecessary trees (by the way, it you need to cut large trees also request permission from the Construction Directorate). Now you can start marking the house on the site in accordance with the project. You can do the markup yourself, or hire a specialist. After the marking is done, notify the Construction Department. Their representative comes to you and again takes measurements in order to make sure your marking is correct. Only after the approval of the marking by the Construction Department, lets now proceed to the stage of direct construction work. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

In the future, when planning the construction process, it is very convenient to use the notebook-diary of construction works issued by the Construction Department, since each of its pages corresponds to the main stages of construction work. For each of these stages (laying the foundation, building the frame of the house, pouring floors, conducting water, sewage, heating, electricity, telecommunications, finishing works, etc.), it is necessary to find contractors i.e. subcontracting firms. Data on such firms can be found on the Internet. Sometimes links and recommendations to construction companies are provided on the web pages of the Construction Department. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

For safety reasons, it is advisable to inquire about the subcontractor via the Internet or, for example, ask the subcontractor for himself a reference list of previous similar works. It should be taken into account that in Finland only some rare types of work are subject to licensing. For example, electrical work and water supply and sewerage works are entitled to be carried out only by specialized authorized firms, that is, firms that have special permission for this. At the same time, for example, the construction of the foundation, frame of the house, roof, finishing work and many other construction works are not subject to licensing. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

Sequence of stages of building a house today remains the same as it has existed for centuries: first of all, the foundation is laid, the erection of the roof and finishing work remain in the end. But since today, your own

house is a complex autonomous system in which each individual part is connected to another, then already at the stage of foundation construction, a plan for each individual stage of work should be ready and all subcontractors should be identified. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

The need to coordinate all work already at the very initial stage of construction can be demonstrated by the example of the dependence of the planning of various stages of construction work on planning the place of a fireplace in a house. The future owner of the house determines, first of all, the place of the fireplace in the general layout of the house: whether to place it in the living room or hall, or in the kitchen. The choice of a place for a fireplace in a house is connected with the planning of its heating system. If, for example, heating is built into the floor, then there should not be heating communications in the intended place of the fireplace. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

The place of the fireplace, as well as its total weight should be known when pouring concrete on the floor: since the fireplace weighs quite a lot, the place of the fireplace always strengthens the floor additionally. Placement of the fireplace should be coordinated with the electrical installation plan. The fireplace should not be placed in close proximity to the connection points of refrigeration systems, TVs. Finally, the location of the chimney depends on the location of the fireplace, and its placement, in turn, is coordinated with the construction of the roof and its insulation. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

Upon the completion of each main type of work, laying the foundation, erecting a frame, erecting a roof, a representative of the Construction Department is invited, who performs an inspection check and makes a mandatory mark on acceptance in the construction notebook. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

In order to enter the already built house, you must also obtain a separate permit from the commission of the Construction Department. The commission checks the house and issues an entry permit if the house meets the safety standards for living and complies with the original design. Permission to enter the house can be obtained even if there are some incomplete construction or finishing works; however, by the time the house is completely commissioned (and it is always agreed upon when purchasing the land), all work must be completed, and the house,

as well as the adjacent land, must comply with the project approved by the Construction Department. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

The certificate from the Construction Department about the final completion of the house is a very important document for the owner of the house. The house becomes the registered property of the owner only upon receipt of this certificate. Based on this certificate, the amount of property tax paid annually is determined. The certificate is also necessary for all further operations with the house - during its sale, reconstruction, completion, insurance, upon receipt of bank loans for it, etc. (According to Reporter Lybov' Ylihuttulaa, Kauppatie OY, Interview November 2, 2019.)

# 9 EXAMPLE OF A PROJECT

## 9.1 Land purchase

The most recommended method to find land to purchase is to search at oikotie.fi and etuovi.com in the ´´tontti´´ sections. Choose the area, size, conditions. It is better to pay attention to that there are old sites, i.e. these are plots where buildings were previously built. Such sites are already sold with the supply of water and electricity, and it is convenient. There are i.e., plots - just a piece of land. When buying this, be sure to check about water and electricity, as the conclusion of new contracts is expensive. It is also advisable to pay attention to ´´rasitus´´. For example, access to the neighbor's house can take place in your area, pipes can also be laid to the neighbor and electricity. There are such options for sites, which seem to be on the second line from the road; in this case the plan always indicates where the entrance to the site is; often it passes along the first section of the road. If you buy a land plot on which there is such an entrance to your neighbor, you should know that this is not very good - your neighbor will not only drive along your land plot, but you will also pay for this piece of his road as if it was your own land. The same thing happens with the supply of water - and if something breaks, they will dig in your area, even if the neighbor has a breakdown.

When the choice made, and the plot was bought, the deal was done. After that, it is necessary to draw up a ´´lainhuuto´´ - this is the official registration of the land; it is additionally drawn up, it costs about 600 euros.

Immediately after buying the house, the information on purchase should be submitted to the tax office of Finland. When buying an apartment, townhouse and your own house in Finland, you need to pay a tax, which will be from 1.75 to 4% of the purchase price. If you buy land, then the

tax will also be 4%, but on the amount of land purchase. (Owner of the project, personal communication, 03.08.2019-04.08.2019)

## 9.2 **House project**

Since the customer decided to build "for life", the project was supposed to be created on their own with many individual preferences. The project was developed together with the architect. It cost about 5,000 euros. Naturally, you can come to the design office and buy your favorite project at home. You can't just draw a project yourself without the approval and calculations of an architect in Finland. You simply will not get a building permit then; naturally, if you yourself do not have the appropriate education and permits.

The architect drew, after which, according to his design, a structural design (rakennesuunnittelu) is created, costing about 5,000 euros, as well as plans for the distribution of water and electricity.

After the project is ready, you must submit it to the department of your city that issues construction permits (rakennuslupa); submit all the papers, which represent all kinds of applications, paid for this permission (the customer applied in Espoo and paid about 3000 euros - it depends on many factors, including the size of a plot). It is also necessary to obtain a consent from the neighbors for the construction. This can also be done, for example, by an architect or a construction department, for an additional fee. Usually, there are no problems with such things, since this is more of a formality, but because of the stubbornness of a neighbor, you can wait for the construction to start an extra half year. The permission itself is done for several months, and if it seems to your neighbor that your house is too high, it may make you redo the project. This is both time and money. Therefore, it is advisable to be friends with your neighbors before the start of construction. (Owner of the project, personal communication, 03.08.2019-04.08.2019)

## 9.3 **Construction**

Earthwork should be done before construction, i.e. you need to prepare your site for construction before the construction itself. This depends on your site and soil. In Finland, there is very often rock, it must be blown up, and it is very expensive. The interviewed owner of the project also had rock, but not large. They had to blow it up a little bit in the right place, but still it cost 20-25 thousand euros (all land work), and additionally crushed stone worth 10 thousand euros. The same applies to other types of land; if you have a swamp, then pay for piles, etc.

This is already determined there what the foundation will be made from. It also depends on the soil investigation (maaperatutkimus), which is carried out even before you receive a permission to build a house. It costs about 1000 euros.

The material of the walls is also your choice. The construction of a prefabricated house is much faster than, for example, a stone house. A simple example is the time needed to install a frame box of the house itself: if the prefabricated structure of a typical house is assembled in one day because of this, all such construction is within six months along with decoration, roof, etc. In the case of the interviewed person, just assembling a box of a stone house is five to six months of work. A total of 1-to 1.5 years is a minimum on such a house (this is until the moment it is possible to live, but, still, not everything is ready). The owners make a comparison between themselves and their neighbors who build a prefabricated house: owners chose the stone, because they decided to build it for a long time; accordingly, when owners just had the skeleton of the box done, their neighbors who were building in parallel a prefabricated house already started importing furniture in.

When making a roof, choose what you feel better, there is metal, and all sorts of soft coatings. Naturally, the owners chose natural tiles, as they followed their principle “for centuries”.

Water, sewage, heating - this area of work is called “lämmitys viemäri ilmasto” or LVI. You have already obtained permission for it, i.e. there is a separate person who does this.

Heating is an urgent issue, as it is quite expensive and due to the climate is relevant in Finland. The owner’s choice is maalämpö or "geothermal heating", so popular now in Finland. It cost about 20,000 euros; afterwards it is to be paid only for the operation of the pump, i.e. for electricity. The owners pay for electricity in their new house, taking into account this heating, about 50-60 euros per month for everything. Of course, the larger the house, the greater the power and the deeper the well, and the more expensive. (According to owner of a house, Owner, Interview 03.08.2019-04.08.2019)

## 9.4 **Permissions, checks and foreman**

Before starting construction, you conclude a contract with the site supervisor (vastaava työnjohtaja). This is a separate company, which, as it were, should protect your interests. In fact, our foreman, appeared at the construction site about ten or twenty times during the entire construction period. The services of a superintendent are paid, they cost about 7000-8000 euros for the whole time, they are paid monthly. The foreman is needed by law and without it municipal government won’t give a permission to build. This is a necessary official person when building a house in Finland.

The construction office (Rakennusvirasto) will be checking the construction of your house at different stages; this should be remembered. If the construction inspector thinks that something is

wrong, you can't build further, you need to redo it and only then continue. Naturally, all this means time and money.
After the house is finished, or rather, of course, not finished, but you can already live in it, you must obtain a residence permit from the city. When you have it, you can enter. Do not forget that after receiving the first building permit, you are given four years to complete all of your construction, together with the adjacent territory to the house. After that, you will again have a check, and you will be given the final paper stating that the house is ready. It does not seem to be in danger for us, so we will need to make changes and pay about 500 euros for them, extending the deadlines. (Owner, personal communication, 03.08.2019-04.08.2019)

### 9.5 **Typical Finnish homeowner's monthly expenses**

It is not strange, but maintaining a separate house in Finland is much more profitable than, for example, a town house or, sometimes, an apartment. If for a typical townhouse on 100 m2 we paid 350-400 euros per month with electricity, then it turns out that a plot of 8 acres, a house of 2 floors on 200 m2, costs us 60 euros (electricity) + 100 euro\s (water) + 40 euros (garbage collection, 4 times a month). All owners pay tax (kiinteisvero), its size depends on a number of reasons: location, land area, size of the house, etc., owners pay about 1000 euros per year. (Owner, personal communication, 03.08.2019-04.08.2019)

### 9.6 **Difficulties**

The Owners specify that there will be darkness of difficulties. As during this project, they have faced innumerous amount of problems. They had troubles with materials, a countertop was not brought, the electrician did not come, etc. (Owner, personal communication, 03.08.2019-04.08.2019)

## 10 **CONCLUSION**

The purpose of the thesis was to give a detailed view on a process of planning and execution of construction in Finland for foreigners. The topic was chosen to show to the people process of purchasing and building of their own house.

Construction is overall a complicated process. Having viewed different parts of it, and having taken into consideration people's points of view and their opinions on such topics as construction process in Finland, difficulties while construction and purchasing land for family house, an approximate diagram of the stages of building a house and the key points

that are worth paying attention to at each of the given stages were provided. In each specific case the given scheme needs to be adjusted and clarified. The step-by-step work flow is attached as an appendix.

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## APPENDICES

APPENDIX 1 – Step by step workflow guide

1. All foreign citizens can buy real estate and property in Finland with almost no restrictions. The only exception is Åland (Ahvenanmaa) archipelago, a self-governing, Swedish-talking district of Finland. To purchase them you need to get permission from the Finnish government.
2. Real estate buyers are eligible for a multi-visa.
3. The key participant in the transaction, which guarantees its safety, is a notary public.
4. The standard purchase procedure before the transfer of ownership usually takes a little more than a month. But documents for registration of a new owner can be submitted within six months from the date of the transaction. If you delay, then interest will be charged from 20% to 100% of the tax on transfer of ownership.
5. Know your numbers, your budget must be compared on every stage of construction and on every choice you make. It is very advisable to plan your budget for 20-25% more than it was calculated. Because, there are plenty of risks you probably could not expect. You can read on how to make a rough calculation of your budget and costs of your house in paragraph 7.6.2.
6. Start thinking of how your future house will look like before your plot is purchased. Otherwise, if you bought plot and did not know that there are rules, design of your future house will be much different from what you expected it to be. In Finland construction regulations are very strict and every different land sector has its own requirements and building regulations. The municipal government supervising the construction industry can also set construction rules (for example, materials for construction and color of the building) that operate on the territory of the municipality. And finally, there official responsible for the supervision of the construction sector by the municipality (usually the construction inspector) can give instructions and recommendations on specific aspects of the construction. In addition, the Finnish Building Code governs and directs building design, construction and supervision.
7. Finding one of the land plots is the initial step when building another property and it tends to be a very time taking process. Recognizing the owner may likewise represent an issue particularly when the land isn't registered. Regardless, when a potential plot has been found and the owner was recognized, you should make sure that your buying rights are secured. To do this, have a specialist draw up a lawful choice which will stipulate that once the arranging application is endorsed the vender is required to offer the plot to you at an appropriate cost inside a particular timeframe. It is not to purchase a plot of land before you were given a building permission as an area of land only turns into a building plot after a planning permit is granted.
8. When buying empty plot, you can choose from flat, lowland, hill, river, inside of a forest or near forest-type of site. Every type is different and would require certain investments. For example, you

chose to purchase flat site. Then accidently it turned out that rocks are under the plot. It means that you will have to pay for exploding. It might become a big number, as exploding is very expensive. It will also be needed to make a dig of a well to provide communications.

9. To avoid mistakes described in paragraph number eight, hire people to carry out the study of a construction site, soil (maaperatutkimus), which is carried out even before you receive permission to build a house. It costs about 1000 euros. Ask to know what is under the plot or hire specialized professionals to check it.
10. Also, when choosing a plot, think about energy efficiency, in the future, when house is built it will make a great benefit if rooms of a house are placed the way that sun heats them, and there is no forest around which prevents the sun rays from reaching the area. More about plots can be read in paragraphs 3.1-3.3.5
11. In addition to the beauty of the surrounding landscape, it is necessary to pay close attention to the location of the site relative to the communication lines: water supply, sewage, network, electricity networks. If it turns out that the listed networks do not pass near this section, it is worthwhile to find out if it is possible to extend additional cables, pipes, and evaluate how much it will cost. If it turns out that significant costs lie ahead, you should bargain with the seller of the site and try to lower the price of the site.
12. Be sure to find out the size of the housing area permissible on this site, as well as the number of storeys allowed on it.
13. Now you can start marking the house on the site in accordance with the project. You can do the markup yourself, or hire a specialist. This stage, as well as other stages, will be checked by construction department of region of Finland, where you build. The number of square meters of living space on the site is strictly regulated in Finland: you can build less than necessary, but you cannot exceed the allowable footage of residential buildings on the site. All requirements from colour and materials to footage and number of storeys can be checked at the Construction department (Rakennusvirasto) or previous owner would tell you.
14. Average time for which permit is provided is 4-5 years.
15. Hire professional chief engineer and building supervisor who have degree and experience in order to not get in a situation where design project would be declined by authorities. You can try to find suitable candidates on the Internet, for example, on the page of the Construction Department.
16. The contracts are drawn up with the foreman and chief engineer, which stipulates their payment, and their data will appear in your application for building permit in construction department, as well as in all subsequent official documents drawn up at different stages of the construction of the house.
17. Hire a designer (Chief engineer might be designer) and tell him what you approximately want to see in your project. He will make a few sketches and you will choose which you like better.

18. When you get determined with a project. Think of what materials your house will be made from. It will largely affect the cost of a project.
19. Before construction starts, government requires two people: chief engineer and construction foreman. Government might say that we cannot let lead your construction supervisor who does not have enough experience. It is advisable that he has bachelor's degree and a few years of experience to be hired. But, it is still possible if you just hire one of your friends to lead the construction.
20. When obtaining a construction permit, it is advisable to give the Chief engineer the task of preparing the actual applications and filling out the required forms. This is a shortcut to the chief engineer. The need for cooperation is all-in-one, and it requires seamless cooperation of all parties. The chief engineer should be in active contact with the authorities throughout the authorization process. Significant aspects of a license search include: Be timely in applying for a permit - this will not slow down or interfere with the construction project; Have enough time for the permit process; Hear your neighbours on the project well in advance; Contact the licensing authorities as early as possible - the permit process is progressing well with them; Define the so-called building design checkpoints that do not progress before the permits are obtained. This is a good thing to do, especially if the licensing process encounters difficulties; Prepare for the follow-up required by permission; Use experts to help you save time and effort.
21. Place and weight of fireplace should be known in advance of construction, as engineering communications and hardening of foundation depend on it. More on fireplace and drawings can be read in paragraph 6.1.2 "Area drawings".
22. Pick checked subcontractors. Data on such firms can be found on the Internet. Sometimes links and recommendations to construction companies are provided on the web pages of the Construction Department.
23. In Finland, some works are to be carried out by licensed subcontractors and some do not need any certified professionals. More on it you can read in paragraph 10 "CONSTRUCTION PROCESS IN FINLAND, ACCORDING TO KAUPPATIE NEWSPAPPER".
24. As permit is obtained, you will be issued with another important document – construction diary. Each page of the notebook corresponds to a specific stage/type of construction work and is filled in by the direct performer of each type of work: foundation builder, electrical installation contractor, plumbing contractor, roof builder, heating system, etc. All stages of the construction work must be accepted by the responsible foreman.
25. You can enter the house when you obtained the permit from Construction Department to do that. Regardless, permission to enter a house might be issued if some little work left.

26. In the end, when final commission is done, constructed house, all work and project must comply with the project approved by the Construction Department.
27. Based on this certificate, the amount of property tax paid annually is determined, and it is also needed during its sale, reconstruction, completion, insurance, upon receipt of bank loans for it, etc.